Veterinary Medicine

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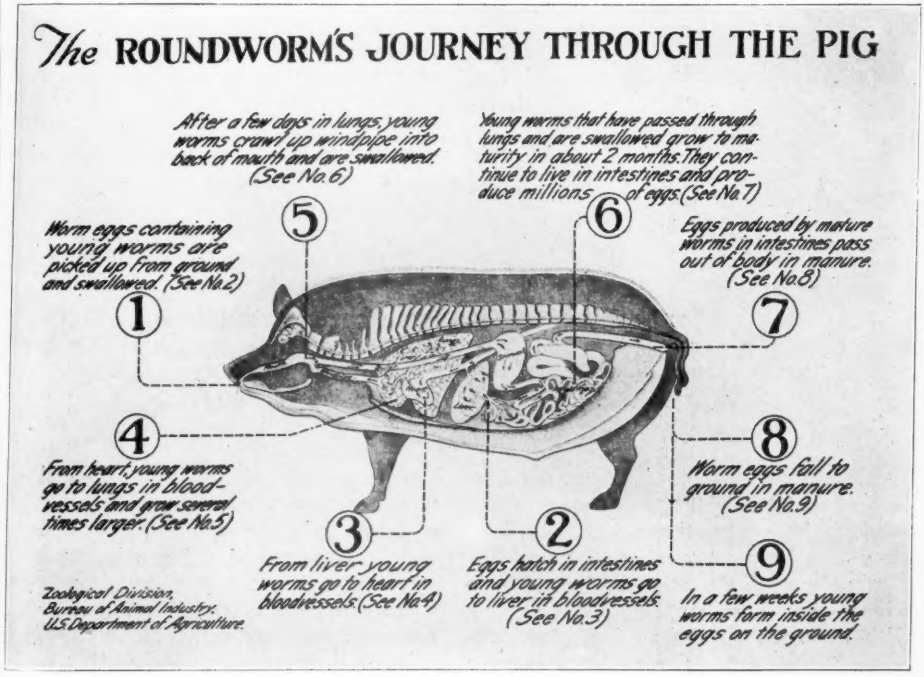
Life History of the Round Worm (Ascaris Lumbricoides) of Swine

The Trouble Caused by This Serious Parasite Is Prevented by a System of Sanitation Devised by Scientists and Now Widely Used by Hog Raisers


The ROUNDWORM'S JOURNEY THROUGH THE PIG
After a few days in lungs, young worms crawl up windpipe into back of mouth and are swallowed. (See No. 6)
Young worms that have passed through lungs and are swallowed grow to maturity in about 2 months. They continue to live in intestines and produce millions of eggs. (See No. 7)
Worm eggs containing young worms are picked up from ground and swallowed. (See No. 2)
Eggs produced by mature worms in intestines pass out of body in manure. (See No. 8)
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From heart, young worms go to lungs in blood-vessels and grow several times larger. (See No. 5)
From liver, young worms go to heart in bloodvessels. (See No. 4)
Eggs hatch in intestines and young worms go to liver in bloodvessels. (See No. 3)
Worm eggs fall to ground in manure. (See No. 9)
In a few weeks young worms form inside the eggs on the ground.
Zoological Division, Bureau of Animal Industry, U.S. Department of Agriculture.

The System Briefly Explained

Clean the farrowing pen thoroughly with boiling water and lye, first removing all litter.

Wash sow with soap and water, using brush, paying special attention to udders, before putting her into the pen.

Within 10 days after farrowing, remove sow and pigs directly to a

field previously sown to forage crops and not subsequently occupied by hogs. Allow no other hogs in this pasture.

Leave the pigs there for 4 months, providing plenty of feed, water, and shelter.

For Further Details Consult Your Agricultural College Or The Bureau of Animal Industry, U. S. Department of Agriculture

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The foregoing is in part the message carried by a two-color placard, 15 by 20 inches in size, distributed by the U. S. Department of Agriculture. It has to do with preventing losses to the swine industry by the McLean County system and is splendid educational material.

Admittedly the information is not sufficiently complete to attain the best results for swine raisers, and they are offered further details on application to the Department of Agriculture. The suggestion to apply to the state agricultural college may be dismissed as a courtesy suggestion, since no agricultural college is in a position to supply the swine raiser with any information on this subject not supplied to it by the Department. The information is to come from Washington either direct or relayed by the state agricultural college.

This is just another evidence of what appears to the writer an unfortunate attitude of the Department of Agriculture toward the veterinary profession, members of which supplied the Department with all the information it possesses concerning roundworm control in pigs. The Department has spent considerable sums to place the information its veterinarians developed by research into the problem of roundworm infestation in swine. The Department has supplied veterinarians with bulletins on the subject; has supplied the veterinary press with numerous scientific articles dealing with this problem; and has sent two or three of its ablest veterinarians to state and local veterinary meetings all over the country to bring this information direct to the veterinary profession. There are in the country 6,000 veterinarians, nearly all practitioners, in whose integrity and ability the Department has expressed its confidence by denominating them "accredited" and for a portion of whose work it stands sponsor.

There are, therefore, at least 6,000 veterinarians, a large percentage of whom are practicing in swine-growing communities, to whom it would appear the Department would be anxious to refer the swine raisers for the "further details." The reason for its not doing so is incomprehensible. It isn't conceivable that responsible officials in the Department can think for a minute that the best informed veterinarian—even Doctor Hall—can sit at a desk in Washington and tell a swine raiser in Iowa how to control roundworms in swine as effectively as the least qualified of the "accredited" veterinarians, who can go to this man's farm and instruct him.

A single paragraph from the testimony of Dr. L. L. Lumsden recently before a congressional committee, describes the attitude of the Public Health Service in the matter of long distance disease prevention. Doctor Lumsden, a trained public health official of distinguished attainments and more than twenty years' experience in public health work, said: "What particular branches of health work are indicated in a given locality must be determined by careful local studies. I cannot determine here in an office in Washington how money available for health work can be spent to the best advantage in a given community; that has to be determined by some one on the local job."

The attitude of the Department of Agriculture in this and many other matters toward the veterinary profession is in sharpest contrast to the attitude of the

U. S. Public Health Service toward the medical profession. It has long been the policy of the U. S. Public Health Service to center all public health activities in a community around the local physician and to require all state health commissioners doing cooperative work to accord similar recognition to the local practitioner. Non-professional employes are not sent into his community to do professional work, and professional employes must collaborate with him. In backward communities where public health nurses and others have been sent by the state and federal health services to carry on educational campaigns for the improvement of community health, the education consists largely in getting the inhabitants of these backward communities to call upon local physicians for treatment of existing ills and advice for the prevention of ills that are imminent.

Through such a policy, the Public Health Service is able to utilize the services of 150,000 professional workers, for whose services it does not have to pay out of public funds, thus extending its activities infinitely beyond the scope that otherwise could be provided for out of congressional appropriations for public health work.

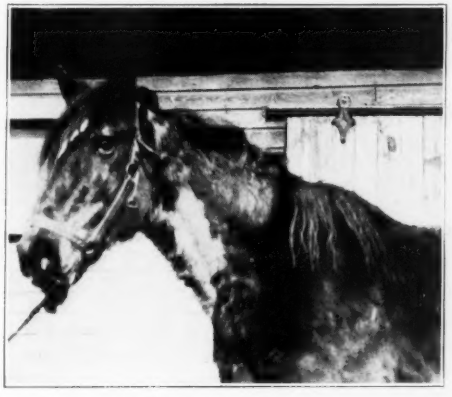
The magnitude of the bovine tuberculosis eradication project has forced the Department of Agriculture to rely upon local practitioners for much of the work entailed by the project. Local practitioners may be said to have rescued the project when but for them it would have fallen from its own magnitude. Yet even with this lesson before it, the Department continues to ignore the tremendous potential force for the improvement of live stock health of the nation that the general veterinary profession constitutes.

The premium paid by packers for hogs that have been marketed in Omaha from Nebraska and Iowa for the first eight months in 1926 amounted to $29,069.16, according to Dr. W. J. Spencer.

LICE AND MANGE OF HORSES

If horses are lousy in the spring at shedding time it is more than likely they will go into the winter infested unless treated to eradicate the pests. When the animals shed their hair in the spring the lice seem to disappear, and the farmer is led to believe that his horses are free. Some of the lice usually remain on the animals throughout the summer, but not in sufficient numbers to cause annoyance or to be easily detected. The animals therefore usually go into the winter infested, and during cold weather lice increase very rapidly.

Since the best remedies are liquid dips, which can not safely be used on horses during cold weather, fall dipping should be



Louse infested horse. Showing how the parasites work on the neck. Photo by Dr. E. T. Baker, Moscow, Idaho.

practiced whenever horses have been lousy at shedidng time in the spring, says the United States Department of Agriculture. Three kinds of parasites are commonly found on the skin of the horse in the United States—lice, mange mites, and ticks. All three may be present on an animal at the same time. The lice can be eradicated by spraying or dipping the infested animals twice with an interval of from 14 to 16 days between treatments.

Mange is one of the most injurious skin diseases that affect horses. Four or more dippings at intervals of from 5 to 7 days usually eradicate the most common form

of the disease. Lime sulphur and nicotine dips are suitable for controlling mange.

Many different kinds of ticks affect horses. The spinose ear tick is prevalent on horses in the Southwest and causes serious damage. The ticks enter the ears of animals where they may be destroyed by a mixture of 2 parts pine tar and 1 part cottonseed oil injected into the ear canal.

ANTHRAX IN MAN

The U. S. Public Health Service reports information received from the health organization of the League of Nations on the prevalence of anthrax cases in humans. Statistics on the disease have been received from only a few countries, and the information is scanty, especially

Bacillus anthracis

for Asia, Africa, South American and Balkan countries. The report states that the disease is obviously not very prevalent in North America and in Northern, Western and Central Europe, but seems to constitute a more serious problem in the southeastern territories of the Soviet Union.

Anthrax appears to be rare in Northern Russia and not very common in Western and Central Russia and in Siberia. Its incidence increases toward the south and is from 16 to 18 per 100,000 inhabitants in the Black Soil and Middle Volga districts and in the Ukraine. It is very prevalent in the Caucasus, the Don district and in Crimea.

Comparative figures of cases reported from different countries are as follows:

	1923	1924	1925
Australia	3	4	3
Lithuania		2	5
Denmak		8	3
Iraq	11	4	10
Poland		59	75
Czechoslovakia		67	47
United States (19 states)	137	170	105
Germany		118	165
Uruguay	186	103	138
Serbs, Croats, Slovenes			501
Italy	2,205	2,728	1,656
Soviet Union	7,801	15,496	16,172

From 1921 to 1924 there was a considerable increase of anthrax cases in Italy, the reports states. Europe as a whole undergoes seasonal fluctuations in anthrax prevalence, it is pointed out, with maximum occurrence in August or September, and minimum in March.

TATTOOING HOGS AT BIG LIVESTOCK MARKET

The practical use of the tattoo method of marking hogs, developed by the Bureau of Animal Industry, United States Department of Agriculture, described by Dr. F. E. Murray in the May 1926 issue of Veterinary Medicine, is proving successful at the Kansas City stockyards and its trade territory. Following a trial of approximately six months, R. L. Cuff, Livestock Commissioner of the Kansas City Livestock Exchange, has furnished valuable information that supplements the experimental work of the department.

The purpose of tattooing hogs is to identify their origin and thus make possible the effective tracing of serious diseases and other conditions to their sources. The tattoo mark is useful also in identifying hogs from various owners who make cooperative shipments.

"We have demonstrated to our satisfaction," Commissioner Cuff reports, "that tattooing is a feasible and practicable method of identifying hogs. When hogs can be driven through a narrow chute

about 24 inches wide, tattoo marks can be applied as they walk through. One day I saw a packer-driver tattoo a lot of 64 hogs in less than three minutes. All

tattoo marks were legible on the carcasses as they hung in the coolers. For our purpose we have found that the tattoo should be applied high on the shoulder just to one side of the backbone."

The tattooing of hogs is especially useful in identifying shipments from areas that have been freed of bovine tuberculosis. A number of packers have been paying premiums of 10 cents per hundredweight for hogs of such origin.

The results described are the sequel to the publication of Miscellaneous Circular 57-M, "The Tattoo Method of Marking Hogs and Its Use," published in March, 1926, by the United States Department of Agriculture. Though various livestock organizations have applied for copies of the publication, the Kansas City Livestock Exchange is the first to report the practical application of the device on a commercial scale.

It is now generally conceded that the tubercle bacillus in milk is destroyed by pasteurizing at 145° F. for thirty minutes. An efficient pasteurization of milk from tuberculous cows is a safeguard, but the elimination of tuberculous cows is the most effective plan for the protection of humans from infection with the bovine tubercle bacillus.

HORSES ON FLORIDA FARMS

The annual report of the United States department of commerce for 1925 on livestock found on farms and ranges of the country, lists Florida as third to last in horses of 2 years old and over. Only 27,150 were found on farms and ranges of the Sunshine state. The District of Columbia, with 234 and Rhode Island, with 5,312, were at the bottom of the row.

Florida, according to the report, likewise showed a disposition to discourage the return of the once familiar horse. Only 3,788 colts under 2 years of age were listed, placing the state 12th from the bottom.

Mules were also considerably neglected. There were only 753 of them under 2 years and but 42,344 of that age and over.

EXTENT OF BOVINE TUBERCULOSIS SHOWN IN NEW MAP

A map of the United States portraying by counties, the extent of bovine tuberculosis in 1926 shows excellent progress in eradicating the disease compared with a similar map issued two years ago. Though in a few localities the resurvey shows a little more disease than shown on a previous map, the new map shows in general a marked decline in the degree of

infection. Six different intensities of shading show graphically the success of all parts of the United States in controlling and eradicating this insiduous foe.

A very marked increase in the number and extent of accredited areas from which the disease has been practically wiped out is an outstanding achievement seen in the comparison of the 1924 and 1926 maps. A brief table shows also that for the country as a whole the per cent. of tuberculosis cattle declined from 3.3 per cent. in 1924 to 2.8 in 1926. The map was prepared by the Bureau of Animal Industry, United States Department of Agriculture.

Approximately $100,000,000 worth of ink is produced and used annually in the United States. The tonnage of ink used is an indication of the state of a nation's civilization.

Alopecia in man, according to recent investigations, may be due to thyroid influence. Thus, it has been noted that thyroidectomy is followed by retarded growth of hair, and the feeding of thyroid enhances the growth of hair.

Front view of Dr. W. A. Knight's small animal hospital at Sam Houston Park, Houston, Texas

Automobile parking space provided for clients at Dr. W. A. Knight's small animal hospital, Sam Houston Park, Houston, Texas

In French Veterinary Circles

GEORGE CECIL, Paris, France

The Army Veterinary Service

FRENCH veterinary surgeons may be divided into four classes. They include those who serve the Republic in a military capacity, the well-to-do practitioners who have settled in Paris and other large cities, the rural *vétérinaire*, and the countryman who, though he has neither undergone any sort of apprenticeship nor passed even the most rudimentary examination, can be trusted to perform minor operations and to prescribe in every case of sickness. The last named, though regarded as a poacher, often is better off than the man who has qualified in the orthodox manner. Of him more anon.

In bygone days, the veterinary student hankered after army service. The prospect of a regular income, paid on the first of every month, transfers from one end of France to the other, including the chance of a few years with the French Army in picturesque Algeria and Morocco, military rank, a uniform, and eventually a pension, proved singularly alluring.

At the moment, however, the Army Veterinary Service is badly served, there being uncommonly little inducement to enter it. Although the bare necessities and the small luxuries of life are five times dearer than in pre-war days, the veterinary officer's pay has not been proportionately increased. Nor is it possible to attain rapid promotion, the senior men hanging on like grim death till the very last minute when the eagerly anticipated pension falls due. Scoffing and disappointed junior officers term them "grasping limpets." They cannot afford to be anything else. . . .

Under the circumstances it scarcely is surprising that existing vacancies in the lower ranks remain unfilled and that the majority of the young men who have passed out of a veterinary school look for civil employment. Ignoring appeals to their patriotism, they have no use for the army; setting up on their own account or accepting an offer of assistant to an established veterinary surgeon is considered more remunerative. Those who are in a position to buy a partnership may find themselves on the high road to fortune. In any case, they are not too badly off.

A French army veterinarian, H. Simonnet, who was liaison veterinarian of the 1st Army, A. E. F., in the World War.

As a result of the Army Veterinary Service no longer being favored, there are rather too many budding veterinary surgeons. Perhaps the government will regulate the situation by limiting the number of students at the various schools. Not a bad way out of the difficulty.

Prescribing for Pets

To some Frenchmen, Paris represents the beginning and end of all things; consequently, those veterinary surgeons who find themselves comfortably settled in the illuminated capital, making a fair amount of money and enjoying every moment of leisure, are envied by the ex-student who, as assistant to a country practitioner, leads a dull life. Some of these young fellows, after a few months of the provinces, accept a smaller, though adequate, salary for the privilege of assisting a Paris veterinary surgeon. Others, "born wise," remain in the provincial town to which they have betaken themselves after qualifying, and prosper. A partnership may await the man who makes himself indispensable, especially if he secures the affections of his employer's daughter. Thus are business and love combined. . . .

There is no lack of work in Paris. For, apart from the daily routine of operating on and attending to sick horses, in the city, many visits are paid to the suburbs and to the racing stables which are within a few miles of Paris. The outlying villages also have the townsman's attention, especially should the case present difficulties which are beyond the comprehension of the local equine authority. Upon these occasions, a stiff fee is demanded, the *vétérinaire* (very properly) arguing that, in absenting himself from town, he is losing money. . . .

"I could have had the mare delivered of her foal for a quarter of this extortionate sum by my brother-in-law, who, as a farmer, is skilled in such matters," grumbles the client (in France every one who pays over money is a client).

"Then why, in the name of common sense, did you go to the expense of engaging me?" is the unanswerable comment. . . .

Paris being given over to pet animals, and many well-to-do Parisians owning a dozen cats and dogs, the veterinary surgeon sometimes is paid a monthly retaining fee in order that he may visit the menagerie every week. Monsieur is expected to diligently search each animal for signs of skin disease, a complaint which is rife amongst town-bred cats. Should he omit to detect the insidious malady, short is his shrift. Recently, a veterinary surgeon gave a clean bill of health to a group of twelve Persian cats, to be informed two hours after his departure, that one of the creatures had developed the unpleasant disease. . . .

"You are," ran the telephonic message, "dismissed." The recipient vainly pointed out that, upon his examining the animal during the weekly visit, there was no sign of any scrofulous disorder; the unhappy man lost the well paid and easy post. Fortunately, he is retained by no fewer than eight owners of pets, each of whom pays him two hundred francs a month, operations such as the castrating of kittens constituting a supplementary charge. There are many of these.

Birds also have the practitioner's attention. The Parisians are extremely partial to canaries, which—and especially during chill winter—suffer from illness caused by the change of climate. The man of applied veterinary science does what is necessary.

The Irregular Practitioner

In the depths of the country, far from the beat of the regular veterinary surgeon, the farmer utilizes the services of a man who, though possessing no diploma of any sort, affords satisfaction. He undertakes calving, foaling and lambing cases, often displaying considerable skill.

The substitute for the regular veterinarian cures skin trouble, powdered indigo entering into the treatment, the most obstinate eruptions yielding to his ministrations. Should goats exhibit signs of poorness, a remarkably dependable condition powder sets them to rights; and the leanness of lean kine speedily vanishes. The fellow is an unfailing authority on the maladies to which swine are liable, a (more or less) certain remedy being provided for each. He is found to be equally useful when the poultry are in small health, or should they require fattening for

the market. All his patrons swear by him.

Every now and then strenuous attempts are made to force the irregular practitioner to pass the customary examination. But the veterinary surgeon of the occasion laughs at the idea. . . .

"My successes in the field of veterinary medicine attest my capability," is his invariable reply when indignantly asked by a *confrére,* who holds a degree, how he dare practice without having qualified. Meanwhile, the "poacher" goes his way—and prospers.

A Woman "Vétérinaire"

There is in the North of France a woman veterinary surgeon, and (so the neighbors say) a highly capable one. Left a widow by a "poaching" veterinary surgeon, and finding that her late husband had dissipated his earnings instead of saving them, she determined to carry on the business. And having for ten years assisted her spouse when engaged professionally, the courageous woman believed herself to be in a position to undertake all cases. Judging from the verbal testimonials of those who employ her, this confidence in herself has not been misplaced. . . . "We are more than satisfied with *Madame,*" is the general consensus of opinion.

The woman *vétérinaire,* like the male "poacher," has enemies amongst the regular practitioners. As, however, *Madame* is busy from dewy morn till still dewier eve, she remains unruffled by threats to report her to the government for quackery. . . .

A woman veterinary practitioner in the North of France. The picture shows the national costume.

Henry Miller News Picture Service, Inc.

Small animal ambulance of Dr. E. E. Ruebush, Washington, D. C. Doctor Ruebush is shown attending to a dog hit by an automobile. The young owner of the animal is Master Albert Edward Holland, Jr., son of Major Holland, U. S. Army.

The Value of the Veterinary Profession in the Preservation of Public Health*

FREDERICK HOBDAY, C.M.G., F.R.C.V.S., F.R.S.E., London, Eng.

THE general public as a body have no conception of the part played by the members of the veterinary profession in the preservation of public health, nor have they the slightest idea that the absolute freedom in Great Britain from such diseases as glanders and rabies, to mention only two of the most terrible of the diseases which are communicable from animal to man, is entirely due to the efficient administration and control exercised by the Veterinary Department of the Ministry of Agriculture and Fisheries.

Other diseases, such as anthrax and foot-and-mouth disease, although occurring at

Reaction to intrapalpebral maillein test for glanders

spasmodic intervals, would be a menace to man if they were allowed to spread without control amongst the animals of this country. Tuberculosis, which is such a scourge among human beings, is equally prevalent among dairy cows; whilst minor diseases, such as mange of the dog and horse, are readily communicable to human beings, and would give rise, if unchecked, to a great deal of discomfort, apart from any question of economic loss.

The above mentioned are only a few of the diseases for the prevention of which it is necessary, in the interests of the public health, for the medical man to seek the aid of his veterinary confrere.

Glanders

Glanders and rabies are two of the most horrible diseases which can attack either man or animal, and they each come to man originally only through the medium of the animal.

Glanders is primarily a disease of the horse tribe, and affects either horses, asses or mules equally alike. Its cause is a small organism known as the Bacillus mallei, on account of its peculiar hammer shape, and when it gains entrance to the system, either of man or animal, it will cause the most terrible illness that it is possible to imagine, practically always terminating fatally, and being accompanied in the later stages by great pain and ulcerative sores in various parts of the body. It is an extremely dangerous organism to work with in the laboratory.

It is a disease which is most commonly met with amongst stable workers and those who come in contact with horses; and some twenty years ago grooms and stablemen of studs in our big cities all knew its name. A man can be readily infected by the discharge from the nostrils of an infected horse, or even by handling the brushes, sponges or stable-cloths which have been in contact with a glandered horse. In London alone it was responsible for an average of nearly 2,000 deaths a year amongst horses in the London

* Reproduced from New Health, September and October, 1926, issues, official journal of the New Health Society, England. Professor Hobday is a member of the council and one of the scientific advisors of the society.

County Council area; whilst Glasgow, Liverpool, Birmingham and certain other large towns in England were also badly infected.

In the South African war it was accountable for the deaths of many thousands of our army horses; and indeed in all wars it has been the bugbear for which the army veterinary officer is always on the lookout. In addition to their being a danger to man, horses suffering from this complaint are unable to do their work properly, and it is so insidious that until it has been present in the system for a certain length of time its presence may remain unsuspected.

Modern veterinary science has now, however, at its command a method by which its detection can be made certain, as by the introduction of a few drops of a special preparation of the organism itself, the skilled veterinarian can tell with certainty within forty-eight hours, even if the animal is infected only in the slightest degree. During the great European war, by means of this test, applied by the officers of the Royal Army Veterinary Corps, glanders was entirely eradicated from the horses and mules of the British Army; and it has been applied so successfully in Great Britain that at the present time the disease has absolutely ceased to exist. This means that now it has been eliminated from the list of diseases which the veterinary surgeon is called upon to diagnose in animals, it has also been eliminated from the list of diseases which his medical confrere is called upon to diagnose in man.

Immunizing dog against rabies

So long as the present regulations of the Veterinary Department of the Ministry of Agriculture are kept in operation, so long will man in this country be unassailed by glanders.

Rabies

Rabies has not been met with in man in England for more than thirty years, and it can never appear again as an epidemic in this country so long as control is kept upon the importation of dogs and animals of the dog tribe. The primary cause of rabies in man is the contact of an abraded surface of the body with the saliva of a rabid animal, and whether the rabid animal is a horse, or a cat, or any other animal, it has always had its origin from a rabid dog. The muzzling order imposed by Mr. Walter Long as Minister of Agriculture, a number of years ago, succeeded after a period of some months' continuous operation in eradicating the disease amongst the dogs of Great Britain, and it then remained for the veterinary advisors of the Ministry of Agriculture to take steps to see that it was not reintroduced into the country.

A second proof of the value of the collaboration between the forces of the veterinarian and the medical man in the cause of public health.

Anthrax

Anthrax and foot-and-mouth disease are ailments which particularly affect cattle, but both are communicable to man.

Anthrax is always serious, as, if not taken in time, it invariably results in death. In

Steer with local anthrax lesion in the left thoracic wall

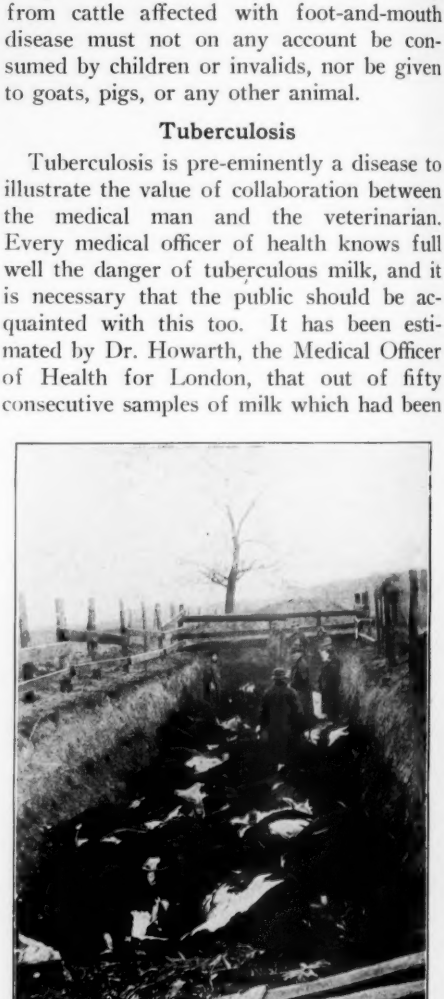
cattle, death is very sudden, and the government has imposed laws and regulations which provide that the body must be cremated as near as possible to the place where the animal died. It is forbidden, too, in any way to cut the carcass, as on many occasions those making, or assisting at, the post-mortem, have become infected and have died in consequence. In Bradford and other districts where wool from foreign countries is handled, disinfection is compulsorily adopted with satisfactory results; and if such practice could also be adopted in the case of hides, bone-manure, and other animal products before they are imported into this country, deaths from anthrax in man and animal would diminish considerably.

Foot-and-Mouth Disease

Foot-and-mouth disease, so much to the fore at the present time, has, in the daily press, provoked a good deal of adverse, stupid and ignorant criticism against the veterinary advisers to the Ministry of Agriculture; however, there is no question but that they have adhered to the correct policy, which is that of "stamping out," although the cost of the outbreaks which have occurred since the war has amounted to between one and two millions of pounds. Yet we have much to congratulate ourselves upon when we compare our position with that of other European countries. The cost to Holland, France, Belgium, Denmark, and Germany, is almost as much as that each year, and they never get any further forward, having the disease always endemic. The public has only to think what it would mean to England if the disease were allowed to spread, with the fact before it that milk from cattle affected with foot-and-mouth disease must not on any account be consumed by children or invalids, nor be given to goats, pigs, or any other animal.

Tuberculosis

Tuberculosis is pre-eminently a disease to illustrate the value of collaboration between the medical man and the veterinarian. Every medical officer of health knows full well the danger of tuberculous milk, and it is necessary that the public should be acquainted with this too. It has been estimated by Dr. Howarth, the Medical Officer of Health for London, that out of fifty consecutive samples of milk which had been



Cattle slaughtered in foot-and-mouth disease outbreak

purchased in the city, not less than one in four proved to be tuberculous; and Dr. Biggs, the Statistical Assessor in Ireland, estimated that 6 per cent of the deaths from tuberculosis were due to drinking tuberculous milk.

At one of the national milk conferences, Dr. Stanley Griffiths, in a paper on "Bovine Tuberculosis and Its Relation to Man," gave statistics which proved more than ever the necessity for the human and veterinary branches of medicine to pull together. In an investigation of 1,200 cases of tuberculosis, he found that 87.5 per cent of infections with tuberculosis of the neck glands in children up to five years of age were bovine, and, similarly, 61.3 per cent of those between five years and ten years, 37.9 per cent of those between ten years and sixteen years, and 25 per cent of those of sixteen years and over. Of 476 cases of bone and joint tuberculosis, 28.7 per cent of those under five years were of bovine origin, 23.1 per cent of those between five and ten years, 9.5 per cent of those between ten years and sixteen years, and 6.4 per cent of those of sixteen years and over. Of 126 cases of lupus, 69 per cent of those under five years, 42.5 per cent of those between five years and ten years, 60 per cent of those between ten years and sixteen years, and 17.6 per cent of those of sixteen years and over, were of bovine origin.

Similar percentages were found in connection with certain other diseases, and of 113 post mortem examinations conducted by the Local Government Board, it was found that in 21.3 per cent of those under five years at death, the infective organism was bovine, and, similarly, in 13.4 per cent of deaths between five years and twelve years. The same medical scientist estimates that tuberculosis contracted through the consumption of cow's milk causes approximately 3,000 deaths every year; and as all these infections are made in the drinking of milk from cows suffering from tuberculosis of the milk glands, it is hoped that now the new regulations, which compel the owner of a cow having anything wrong with the udder to call in a veterinary surgeon, are in operation, it will have the effect of eliminating in a great measure the chances of infection from the cow to man. The diagnosis of tuberculosis in the cow can only be made accurately by the trained veterinarian, and his value in relation to the public health is again here demonstrated.

Mange of the Horse, Dog and Cat

Mange of the horse is now dealt with in all parts of Great Britain under a mange order issued from the Ministry of Agriculture, and its spread has now been effectually checked, although not yet completely eradicated; but the number of cases of mange in the horse is now extraordinarily small; the average for the second week in the month of July for the whole of Great Britain being only seven outbreaks and thirteen animals attacked. It is, however, to the domestic pets, especially the dog and cat, that the attention of the public should be drawn, for it is quite an easy matter for a pet dog to transmit the parasite of mange from itself to its owner.

An itchy dog should, therefore, always be regarded with suspicion, and the pernicious habit of allowing a dog to sleep in bed in company with a human being should be very emphatically discouraged. A dog with mange, especially in hot weather, or when its body becomes heated by lying in front of the fire (or sleeping on an eiderdown or blanket), will be continually scratching, especially in the region of the armpits and under the thighs, where the body is hot and the hair is thin. If no treatment is adopted the dog will break out in sores and the hair will fall off; and the animal presently becomes very offensive in smell and covered with scabs. If allowed to come in contact with any part of the human body for more than a few minutes, it is quite an easy matter for the parasite to transfer itself to its human host; and it may remain there for quite a considerable number of days or even weeks until it has finished its life history.

There are numbers of other diseases in which it is of value to the Public Health Service that, in the fight for their eradication, the human physician and the veterina-

rian should collaborate, for the patients of each are equally attacked. Cancer can be taken as a type, for this dreaded disease is recognized in horses, cattle, dogs, cats, and even in fish; and many of the theories which research workers form, if their observations are concentrated on man alone, can at once be seen to be erroneous upon comparing notes with veterinary pathologists, whose lives bring them in daily contact with the comparative aspect as seen in the naturally infected animal.

Foreign countries have for a long time recognized that, and their respective governments have granted liberal funds for research into the problems of animal diseases and their relation to the public health. Great Britain, as usual, has been very much behindhand in this respect, although, during the past few years, by the establishment of an Animal Research Institute connected with the Royal Veterinary College at Camden Town, the Institute of Animal Pathology at Cambridge, and the Disease of Animals' Research Association in Edinburgh; together with the establishment of University Veterinary Degrees and the postgraduate Diploma of Veterinary State Medicine by the Council of the Royal College of Veterinary Surgeons, there is a good prospect that before another decade has passed a government organization of veterinary officers of health will be accorded an important place in public health.

The Pasteurella Group, Symptoms, Manifestations and Treatments

H. J. MAGENS, V.M.C., V.S., Houston, Texas

DURING the past year the author was fortunate to observe throughout the vicinity of Houston a large number of outbreaks of hemorrhagic septicemia or pasteurellosis bovis, and due to the fact that they differ considerably in their symptoms, their virulency and manifestations from the types described in the current professional literature, they were thought to be of interest to the profession at large.

On June 17th we were called to a dairy farm about ten miles west of Houston. Upon arrival we found four cows with nearly identical symptoms. All four suffered from an acute tendinitis causing their gait to become uncertain and stiff. All four cows also exhibited a very serious mastitis suppurativa interstitialis in one or more quarters of the udder. Milk secretion had nearly ceased, the affected quarter yielding none or only very little of an oily, yellowish secretion, which when subjected to a temperature reading showed a marked elevation. A very hard infiltrated mass extended from the quarters in question as far forward as the umbilicus, or if the posterior quarters were affected, well up towards the perineal groove.

The cows involved refused their feed as well as the water offered to them. Ruminatory sounds were very insignificant, in some instances totally absent, indicating a ruminatory paresis or stasis. Bowel action absent, if present of a fetid odor, dark of color, mixed with mucus as well as bloody patches often very solid and small in size. All mucous membranes were anemic. The eyeballs were either heavily congested, appearing of a dull red color or they were jaundiced. A fetid odor emanated from the mouth and the general appearance of the animals was naturally very miserable. All animals showed a rather small, hard, wiry pulse of an increased pulse rate. The breathing was shallow, abdominal in character, very labored at times. Distinct râles were observed in the lower third of lung areas bilaterally, and percussion sounds were dull, often even in the prescapular field. The elevation in temperature was not as high as the general clinical aspect of the patients would lead one to suspect.

The rather astonishing fact was, at least in our estimation, the involvement of the udders coupled with the tendinitis. Although the latter has been described in the European literature in connection with the pasteurella group, especially by Hutyra and Marek, Reisinger, et al, the author heretofore never experienced it in this country in such a striking way, since, in these outbreaks it seemed to be almost a specific symptom developing away ahead of the others. We were unable to find anywhere in the literature the observations we made with regard to the involvement of the udders, excepting a very recent article by Dr. Shlotthauer of the Mayo Foundation at Rochester, Minnesota, who also isolated the bacteria of the pasteurella group in the secretion of the milk glands. It is especially on account of these findings that we were prompted to report these cases. Due to the presence of piroplasmosis, anthrax and a very common form of weed or forage poisoning, the diagnosis was rendered very difficult. The fact of râles in the lungs, the symptoms shown by the intestinal tract, the rather moderate elevation of temperature, induced us to make a tentative diagnosis of hemorrhagic septicemia, later on verified by laboratory and postmortem findings.

Treatments

In keeping with our tentative diagnosis, the treatment consisted:

Biologically: 15 to 25 cc. hemorrhagic septicemia aggressin;

Internally: nux vomica, magnesium sulphate and formaldehyd in proper doses with several gallons of water by the mouth (mass treatment);

Externally: tincture iodin, gum camphor, glycerin in proper proportions to be painted upon the infected parts.

The following morning two cows showed marked improvement, whereas two cows began to show symptoms; two cows showed only a slight decrease in temperature, and two cows had succumbed during the night. Postmortem examination was held upon the two cows deceased and tentative diagnosis was confirmed. The edema of the udder extended as far forward as the umbilicus being very hard and firm with a well marked line of demarkation. Upon cutting it revealed a hard, doughy infiltration in places yellowish in color. The discharge was also yellow of color having apparently the physical properties of urine. Hemorrhagic infiltrations were found upon the pericardium, all through the small intestines and in both instances hemorrhagic infiltration and areas bilaterally over the shoulders and the neck. The pleura was also well covered with hemorrhagic areas and the lungs showed the typical lesions of the disease.

Sterile specimens were taken from the pleural, the cardiac cavities, as well as from the udder, to the city laboratory of Houston. Bacteria from the bipolar group were isolated from all specimens promptly. Due to the fact that these bacteria heretofore had not been isolated from the secretions from the udder, another specimen was brought to the same laboratories, and again the same results appeared, although this second specimen had been obtained from another animal at a different time. The author takes gladly this opportunity to express his thanks for the cooperation and substantial aid extended to him through the courtesy of Mrs. Moore, Bacteriologist of the City of Houston, as also to Dr. S. R. Dunn, D. V. M., Chief Milk Inspector of the City of Houston, who in several instances assisted at and performed the necessary autopsies, thereby confirming the above findings.

During the second day of the treatment of this particular herd, the author instituted the injection of large doses, 25-35 cc. and daily increasing up to 60-75 cc., of the filtered and mixed exudate from the udders of several cows involved, as suggested by late researches, and with very beneficial results in all instances.

All symptoms of the newly developed cases were identical with those described above with the exception of one cow which showed a partial laryngeal paresis and which upon abduction exhibited a very extensive, heavily infiltrated edema in the region of the larynx, extending far along the trachea,

gradually diminishing in thickness and degree of infiltration towards the lower part of the brisket. The temperature of the animal in question had been always rather elevated but dropped below normal several hours before the end. The lungs were in a stage of red hepatization, the pleura ingested; the tendinitis had been very marked, although all other internal organs were negative at postmortem examination. Laboratory specimen from this case yielded just a few colonies of the pasteurella group.

Treatments were continued as before. Subcutaneous injections of filtered secretion of milk glands were continued, gradual increase in dosage being practiced.

Although all cows were vaccinated prophylactically immediately with two doses of the hemorrhagic septicemia aggressin two days apart, several animals, twelve in all, had to be isolated since they showed symptoms of an alarming nature. All of these latter cases recovered but three, and it is interesting to note that the cases appearing more favorable were just the ones to die and very rapidly, and upon postmortem examination were found, except for lesions in the udders, the heart and the lungs, nearly negative. All of them showed a sharp decline in body temperature before death.

Due to lack of drinking water another herd was using daily these infected premises and stable facilities. Of this herd three cows showed alarming symptoms. Mass treatment as described heretofore was started immediately energetically. All cows were vaccinated at once and no fatalities have occurred up to the present. Since then almost twenty different herds exhibiting the very same symptoms, have been treated. Everywhere postmortem examinations were held and laboratory examinations made to confirm the diagnosis. In many cases owners only called after severe losses had been sustained. One man lost eleven head in less than a week, and after the measures outlined in the foregoing the trouble subsided. Most farmers believe they are dealing with a certain type of piroplasmosis so common here or a certain type of forage poisoning also frequently met with in these counties. In all these instances laboratory findings were insisted upon to emphasize the postmortem and field symptoms.

In all cases vaccination was suggested, double or triple doses being used without the slightest ill effects, the cows vaccinated not even (in many instances at least) showing a decrease in milk production. Very recently six calves with marked râles in the lungs and dull areas of percussion with very high temperature, complete loss of appetite, etc., were vaccinated three consecutive times with 15 cc. of hemorrhagic septicemia aggressin, one day between treatments, and all of them made a splendid recovery.

The feature to be emphasized is the fact of isolation of the B. bipolaris in the secretion of the udder and the therapeutic value of hemorrhagic septicemia aggressin, with regard to its curative effects. This we feel valuable for the treatment of large herds under field conditions, in chutes, etc., as well as for the treatment of range stock. The successes of the author in curative treatment with hemorrhagic septicemia aggressins in poultry practice gave the necessary encouragement and precedent to rely upon this product also in bovine work. Very interesting is also the marked success with the injections of the filtered secretion from the udders of the cows infected, which coupled with internal as well as external treatments of the parts, was found to cut down materially the time needed for reconstruction. Exchanges dealing with this latter treatment especially would be very interesting and instructive.

Trachoma may be due to deficiency in vitamins or proteids. It has been suggested that a deficiency may produce xerophthalmia or similar conditions, thus predisposing to a variety of infections that produce the inflammation of the structures of the orbit that characterizes trachoma.

Goats of the Guadalupe Island have, because of the scarcity of food, become proficient in climbing trees to obtain bark and foliage and to swim into the ocean and obtain seaweed.

Ovary Transplantation to Correct Abortion and Sterility

C. H. GRUNERT, V. S., Fort Saskatchewan, Alberta

OUR knowledge regarding the endocrine activity of certain glands has opened up new channels for observation and research in one of the most important subjects of veterinary science, bovine sterility. Thanks to the energetic and diligent work in biological laboratories, great achievements have been attained with the discovery and manufacture of glandular extracts from the thyroid, adrenals, pituitary, corpus luteum, etc.

Since it is an established fact that a close relationship exists between the endocrine sex-glands and practically all the other glands of internal secretion, admitting, however, that it is the ovary's internal secretion first of all which initiates the sex-hormonic effect of the other glands, it may be said that synergistically balanced extracts of the whole endocrine system have proven to be very effective in some of the most obstinate sterility cases, whereas, on the other hand, many failures are recorded. And there are probably good reasons for that:

1. During the preparation or manufacturing process of such extracts, it is quite possible and most likely that these complex chemical products undergo unknown changes so that in reality they do not represent the actual secretions of a gland "in situ." Such changes will vary according to the methods of preparation.

2. Since it is known that usually more than one hormone is secreted by a gland, it is likely that we obtain but some of the substances which are during lifetime secreted by the gland, probably missing just as many.

3. Quantity and time relations during natural secretion will play an important factor, both of which cannot be imitated in artificial extracts.

Would it be possible to overcome some or all of those difficulties by implanting or grafting an active, living gland?

It is positively known that the ovaries are organs of internal secretion and produce, not mentioning ovulation, sex-specific hormones owing to the endocrine activity of the gland's interstitial cells. To insure such action, the phenomenon of life is a stipulation beforehand. If interstitial cells diminish, atrophy or die, the production of sexual hormones will decrease and eventually cease altogether, whilst on the other hand with an increase of interstitial cells, an increase of hormonic production will take place. Such an increase of interstitial cells may be experimentally and artificially obtained by application of, and by exposure to X-rays, and, what is of greater interest still, by ovary transplantation. That is to say, at the histological examinations of parts of an ovary which had been transplanted and which "took well" in the new host, an immense increase of interstitial cells can be always observed which, without doubt, must have produced greater endocrine activity resulting in an intensified production of sexual hormones.

Nature has invented a peculiar device of controlling the production of necessary sex hormones, automatically, it may be said, in the form of what is termed as a "corpus luteum," a conglomeration of interstitial cells resembling in every way the interstitial cells of the ovaries, with some additional fatty inclusions of yellow color, the so-called lutein. During the development of an ovum and more so, at the time when a graafian follicle bursts, a considerable tissue loss with lowered secretory function of the ovary must take place, when Nature sees it fit to enter into a swift process of regeneration in form of a corpus luteum. This corpus

luteum, acknowledged today to be practically a gland of internal secretion itself, will persist for a short period only if pregnancy does not take place and is termed a false corpus luteum, or periodical corpus luteum or corpus luteum menstruationis of homo sapiens, to eventually undergo a process of absorption and to disappear; or it will persist for a much longer period, if pregnancy develops, as a true corpus luteum or a corpus luteum gravidatis, when also, towards the end of pregnancy, it will enter into regression and vanish. There is no functional difference between a true and a false corpus luteum, their endocrine activity according to a modern investigator being "to prevent the return of the uterus to an infantile state as well as prevent climacteric (pre-senile) atrophy of the uterus and to render possible transformation in the uterine mucosa necessary for fixation and growth of a fertilized ovum." The accuracy of this statement justifies the asumption that a premature regression and absorption of a corpus luteum of gravidity may lead to an unexpected expulsion of the fetus; in other words, one form of bovine abortion may be attributed to hormonic deficiency.

On the other hand, a false or periodical corpus may not get absorbed in due time with the result that, although ovulation may go on which it is known to do independent of estrum, its hormones keep the uterine mucosa in such an altered and abnormal condition—"in a state of pregnancy which has not come about"—that fecundation cannot take place. In other words, an endocrine super-activity is the cause of one form of sterility. In practice, such cases, which appear to resemble a chronic endometritis, respond usually splendidily to a simple dislodgment of the corpus luteum, or probably of several of them, per rectum.

Last but not least, a third condition will have to be taken into consideration: An ovary may be quite active in discharging some ova through the graafian follicles without being followed by the formation of a corpus luteum. In that case, although impregnation of the ovum in the fallopian tubes may take place, the uterine mucosa will not enter into the state necessary for further development and the fertilized egg will become expelled from the uterus altogether known as the very earliest form of usually unobserved abortion. Due to endocrine insufficiency, ovaries, uterus and even vagina become then eventually more and more atrophied unless the wanting hormones are artificially replaced. In other words, the sexual organs have entered into a naturally senile or into an unnaturally pre-senile condition. It is in these cases, where the implantation of a living ovary containing one or more corpora lutea, should be advocated, whilst in the first one the application of artificial glandular extracts may be in its place.

Before concluding, it may be added that a rather materialistic reason should induce us to have recourse to such an original and successful operation as ovary transplantation. Our livestock men of today are, as we all know, very susceptible to the discriminative talk of quacks and charlatans in the matter of veterinary therapy. Furthermore, some biological wholesale houses of today unscrupulously peddle their manufactured goods amongst the laity giving free advice and instructions as to their administration by particularly laying stress upon the use of a hypodermic syringe which instrument has thus undoubtedly come into great discredit. By employing such a method of treatment as gland grafting wherever it is indicated, we shall do a great deal to raise our professional standing to a greater esteem in the eyes of the public.

Mastitis in Dairy Cows*

A. T. KNOWLES, Miami, Fla.

MASTITIS, although much discussed by different writers, is ever with us, and it is considered important enough to receive consideration at this meeting.

It is not the intention of the writer of this paper to go into an exhaustive discussion of all phases of mastitis, but more particularly to confine his remarks to those conditions that are most frequently found in general practice in this state.

We are all more or less familiar with the anatomy of the udder, and the causes and symptoms of mastitis. I shall, therefore, give only brief consideration to this part of my subject.

The udder is a tubulo-alveolar gland. It consists of a secreting part, the parenchyma, and a connective tissue framework known as the interstitial or stroma, numerous lymph vessels, blood vessels, and nerves.

The parenchyma consists of tubules, ducts, a milk sinus and a teat canal. The interstitial or stroma consists of a fine network of connective tissue which is attached to and supports the parenchyma.

Mastitis is primarily a local disease affecting the udder, with symptoms and lesions confined to that organ, but under some conditions the animal may develop general symptoms.

For the sake of convenience I have chosen to discuss the two principal forms of mastitis; interstitial mastitis, which may be either simple or infectious; and parenchymatous mastitis, which may be catarrhal or infectious.

The causes of mastitis may be divided as follows: (1) excessive congestion of the udder at the time of parturition; (2) external factors such as cold, heat, bruises, cuts and irritant drugs; (3) infection.

Simple mastitis, or garget, may result from excessive congestion of the udder at the time of parturition. This condition usually subsides soon after relieving the udder of milk has begun, but may become serious and require treatment.

Bruises, though not usually serious, may become so if there is an excessive destruction of tissue accompanied by considerable hemorrhage and extravasation of lymph.

Cuts are more serious, depending upon their proximity to the teat canal or the sinus, and also whether virulent infection is carried into the wound. If the wound penetrates the teat canal or the sinus, the result is a very serious condition which is usually discouraging and unsatisfactory to both the practitioner and the client. Cuts in other parts of the udder may carry infection into the deeper tissues and cause serious trouble.

Heat and cold are not considered here; however, irritating drugs applied unintelligently, do occasionally present a serious problem.

Infection causes the most serious form of mastitis which I encounter in my practice, more particularly that which gains entrance through the natural opening of the teat canal.

Interstitial mastitis is that form where the interstitial tissue is the seat of the inflammation. This type may exist alone or it may be associated with parenchymatous mastitis. It may be a simple mastitis, or it may become serious as the result of impaired circulation, or disintegration of tissues complicated with infection.

Parenchymatous mastitis may be simply catarrhal and respond readily to treatment, or it may be infectious. This form of mastitis, as pointed out before, may result from cuts or from infection gaining entrance to the parenchyma through the natural opening in the teat.

* Presented at midsummer meeting of the Florida State Veterinary Medical Association.

We are all so familiar with the symptoms of mastitis that I shall not dwell on that part of the subject.

While a correct diagnosis of each case of mastitis is necessary before intelligent treatment can be applied, I feel that much of our trouble with this disease, or condition, is due to our failure to apply proper treatment as fully as we should.

Many therapeutic agents have been used in the treatment of mastitis but none has been found that will assuredly cure the disease and restore the affected quarter to normal in every case. The seriousness of the cause and the virulence of the infection have much to do with the result.

Since in acute mastitis there is always congestion accompanied by swelling and extravasation of fluid, it is always well, in the beginning stage especially, to administer treatment for the purpose of relieving this congestion. I find that arecolin and pilocarpin administered hypodermically as soon as possible after the beginning of the disease, are often very beneficial. A full dose of a saline purgative should then be given but should not be repeated.

In the case of simple mastitis or garget, I use the foregoing treatment with moist heat or cold application to the affected part, and have the milk removed at frequent intervals. This treatment in most cases is successful.

Mastitis from bruises usually responds to the treatment mentioned, unless there is excessive destruction of tissues accompanied by considerable hemorrhage. In such cases it frequently becomes necessary to use surgical means to drain the decomposing fluid and remove injured tissues.

Mastitis resulting from cuts requires very careful treatment to combat infection. This is accomplished by antiseptic surgery and good wound treatment. Where the laceration enters the teat canal or milk sinus, allowing the milk to escape, there almost invariably follows an infection that usually results in infectious parenchymatous mastitis. The treatment of this form of mastitis will be taken up later. When the teat canal or milk sinus is entered by an injury, the wound should be given antiseptic treatment as thoroughly as possible. It is useless to try to close the wound as long as milk comes to that quarter. After the milking period is over the opening into the teat canal or sinus may be closed by surgical means.

Infectious parenchymatous mastitis in the acute stage should be treated with purgatives and applications of heat or cold, as in the other congestive stages of mastitis. In addition the milk and pus should be frequently removed from the affected quarter. This is often accomplished with difficulty, due to the thick, stringy contents of the quarter. I invariably irrigate the udder with Dakin's solution, using a soft-nosed rubber syringe. I have long since ceased to use the milk tube. Dakin's solution is non-irritating. It will help to destroy the infectious organisms with which it comes into contact, and will assist in removing the contents of the quarter.

Drugs to be given internally, such as formalin, potassium iodid, salicylic acid, etc., which may be eliminated through the udder, have been recommended from time to time, but in my practice I have failed to get any beneficial result from this form of treatment.

Bacterins have been used with reports of both favorable and unfavorable results. In my practice I have found autogenous bacterins to be very effective, and I always use them when it is practical to do so. At the present time we are using in our small animal practice an autogenous filtrate which we believe is giving us good results. I believe this product, when prepared from pus derived from a cow's udder, should give excellent results in infectious mastitis in cows, and we expect to use it in our practice in cows. This filtrate can be prepared at slight cost in our own laboratory.

Reports on 3,000 aborts, 13,000 blood tests, 212 bacteriological examinations of uterine secretions, showed 65 per cent infected with the Bang bacillus. A prominent Michigan investigator states that he was able to find the Bang organism in 75 per cent of the cases of abortion coming under his observation.

Rumenotomy in the Cow

2nd Lieut. E. E. HODGSON, V. C.

SOME time ago I was called to see a mature grade Holstein cow, seven and one-half months in pregnancy, presenting a typical picture of impaction of the rumen with loss of appetite and bloating. Palpatation per rectum disclosed that the rumen was filled with a large hard impacted mass. The stomach tube was passed and about five gallons of water administered containing a stimulant—an ounce each of turpentine and formalin and one and one-half pounds of Epsom salts.

The patient was still bloated the following morning and seemed to be in considerable pain. During the late afternoon the owner called, very much alarmed, and having previously seen a successful rumenotomy performed upon another cow, insisted that I operate at once. The animal was placed in a stanchion in one end of a none too clean cowshed. An anti-kick chain was applied and two non-slip loops of rope passed around the body, one being placed behind the shoulder and the other in front of the udder and behind the point of the ilium. The two ropes were then tied high to the wall. An ounce and a half of chloral hydrate was given by the mouth and a three per cent solution of quinin and urea hydrochlorid injected locally, this being the only local anesthesia available. The operative area was shaved and disinfected and the operation performed with the aid of a gas mantle lamp, a kerosene lantern, and one typical farmer for an assistant.

After making the incision into the abdominal cavity, as per textbook instructions, the rumen was punctured as high as possible, the finger inserted, a portion of the organ withdrawn and the opening enlarged by means of a blunt pointed bistory. It is important that the incision in the rumen be carried no lower than the abdominal incision so that the edges of the latter may be overlapped by the former and undue contamination from the stomach contents be prevented.

Two seven-inch rat-tooth forceps were clamped on the free edges of the rumen and my able assistant held them securely during the remainder of the operation. The ingesta was removed by the handful and upon reaching the lower half of the organ I found the fluid which had previously been administered.

Exploration revealed that the omasum was distended and as hard as the proverbial rock, and by reaching through the reticulum, the opening of the omasum was found to be completely occluded with food. I have never seen a statement in print that the opening of the omasum could be examined in this manner and neither by repeated questioning of other veterinarians have I been able to substantiate it. Since performing the operations, however, I have seen Dr. J. N. Frost's article in the A. V. M. A. Journal, in which he hints that it is possible. The impacted mass was slowly removed from the omasum by inserting the finger and working carefully between the leaves of this organ, this procedure being rendered less difficult by allowing the fluid contents of the rumen to soak beyond the finger tips. No material was left in the rumen.

The operator's hands were by this time far from aseptic as were also the incised edges of the rumen, and a thin elliptical slice was trimmed from each edge of the wound with a view to preventing infection. The incision was then closed with a strong continuous suture, and it was found that as a result of the trimmed edges the tendency of the rumen was to turn the wound inward, thus bringing the serous surfaces together. A Lembert catgut suture was employed to hold the serous surfaces in apposition.

A double tape suture was used to close

the abdominal wound and a mattress suture was passed through the skin, muscles and peritoneum, about an inch and a half on either side of the wound. Post-operative treatment consisted of stimulants and the cow began to eat on the second day and made an uneventful recovery. Five weeks later she dropped a healthy calf.

It is the belief of the writer that atony of the rumen and its impaction are very often secondary to occlusion of the omasum. Inasmuch as no pre-operative examination of a reliable nature can be made, however, diagnosis of this condition is difficult if not impossible.—Army Veterinary Bulletin, Oct. 13, 1926.

Treatment for Infectious Abortion

F. R. EDWARDS and J. H. COFFMAN, Experiment, Georgia

THE Georgia Experiment Station, in cooperation with the Georgia Bureau of Live Stock Industry, has for the past four years been studying infectious abortion of cattle as one of its major projects. This work was started primarily with the idea of working out a practical method of controlling and eradicating this disease from a herd by means of quarantine and sanitation. Progress has been made on this but in view of the fact that many of the details of this method still need to be tried out further it is not deemed timely to issue an announcement now on this phase of the work.

In the summer of 1924, plans were made for a series of experiments to study the possible curative properties of a number of chemical compounds when injected into the blood stream of the animals infected with the abortion organism. All of the compounds considered were blood-stream disinfectants. It was hoped that infectious abortion might be cured by one or more of these compounds in much the same way as syphilis is cured in man.

All work along this line has been done cooperatively by the Georgia Experiment Station and the Georgia Bureau of Live Stock Industry. Messrs. G. C. and A. C. McKinley of Milledgeville, Georgia, and Col. George E. Mallet of Jackson, Georgia, have assisted greatly in this work by contributing the use of infected animals for the experiment.

Of all the drugs considered for this work, acriflavine (diamino-methyl-acridinium chloride hydrochloride) was chosen for first trial because of its bactericidal action and its apparent affinity for the female generative organs. It seems likely that some of the other related compounds might have given similar results.

The cows used in the experiment with acriflavine had all aborted on one or more occasions and some of them had evidently been rendered non-breeders by this disease. All had given positive reactions to the agglutination test in dilutions ranging from 1 to 50 to 1 to 500 and higher. Three successive intravenous injections of the acriflavine in physiological saline solution were given one week apart. The first injection for all cows was of a 1 to 500 dilution, the second of a 1 to 350 dilution and the third a 1 to 200 dilution. The cows were divided into three groups of two each. Those in group 1 received 100 cc. of the solution at each injection; group 2 received 150 cc.; and group 3 received 200 cc. at each injection.

Three tests of the presence of the disease in the experimental cows were employed. The first was the agglutination test of the blood sera of the cows; the second, the intraperitoneal injection of milk from the cows into guinea pigs; and the third, the calving records of the cows.

Within one year after the work was started, the reaction of the blood from one of the cows gradually became less markedly positive and in fourteen months it was negative to the test. The blood from all other

cows was gradually losing its power to agglutinate the organism.

Postmortem findings in the guinea pigs that were given an intraperitoneal injection of milk just prior to the first treatment of the cows with acriflavine were positive in several cases after twelve weeks of incubation. There were no lesions found in the guinea pigs injected with milk just prior to the second treatment of the cows and seven days after the first treatment. Those guinea pigs injected seven days following the second and third treatments of the cows showed slight lesions after an incubation period of twelve weeks.

The calving record is perhaps the most important of all from a practical standpoint. All cows receiving the two larger doses have bred and produced normal calves following a normal gestation period. Two of these cows had previously become non-breeders from the disease. The two cows in the group receiving 100 cc. of the solution were non-breeders and did not breed following the treatment. This would seem to indicate that large doses of the chemical are necessary.

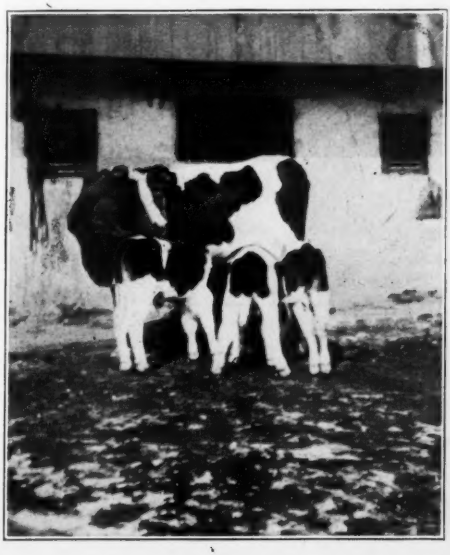
The use of acriflavine had no apparent bad effect on the cows except to reduce the flow of milk for a few days. Swellings were produced along the jugular groove and persisted for some time. This swelling was probably due to a needle of too large caliber being used for the first injection, allowing a slight leakage at the point of puncture in the vein. These swellings appeared within a few hours after the injection of the acriflavine and, while they remained for some time, they did not seem to cause any physical reaction of the animal.

While acriflavine has seemed to give the best results of the compounds tried, it must be borne in mind that this work is still in the experimental stage. The treatment is now being repeated in larger doses in a badly infected herd of about 75 head of dairy cattle and it is hoped that more definite information will be available later.

We are planning to continue the work with acriflavine and its related compounds as well as with other blood-stream disinfectants. It is needless to remind the veterinary profession of the importance of this work. Infectious abortion is our most costly live stock disease. Heretofore very little has been accomplished in the way of checking its ravages, and the annual loss is growing rapidly. We estimate that one animal out of twelve in the United States is infected, and that the average annual loss from the disease is about $40 per infected animal. This indicates an annual loss of over $80,000,000. The disease is very prevalent in Europe.

It has never been conclusively shown that this disease affects man but the Micrococcus melitensis, which causes Malta fever in man, is very similar in both its microscopic and cultural characteristics to the Bacillus abortus (Bang), the organism causing infectious abortion in cattle. If acriflavine is successful in the treatment of infectious abortion in cattle there is reason to believe that it might be useful in the treatment of Malta fever in man.

This information is being given out now chiefly that other institutions of science may take up this promising line of work experimentally.



The Anti-Hog-Cholera Serum Shortage*

G. H. WILLIAMS, President, Corn States Serum Co., Omaha, Nebr.

HOG cholera is widespread at the present time in Ohio, Indiana, Illinois, Iowa, Minnesota, in the southern part of South Dakota and northeast Nebraska, and to some extent in eastern Kansas. The situation has been very serious in all the territory named. The action of the U. S. Department of Agriculture in reducing the test period of serum was extremely timely and is calculated to save a vast number of hogs for the farmers of the country.

That hundreds of hogs are dying of cholera for want of serum to protect them, is not due to a shortage in the amount of serum produced, because there has been as much and probably far more serum produced this year than last year, but is on account of the unusual demand from farmers who usually do not have their hogs protected, and from those threatened by extensive outbreaks of hog cholera.

The demand for serum has been good since the first of June, and much vaccination has been done. In fact, records show that already more serum has been used in 1926 than was used in all of 1923, which was regarded as a good year for serum. The amount used to date in 1926 is double that used in 1924, and more than 50 per cent. greater than the amount used during the whole of 1925.

What Really Happened

You will recall in 1924 and 1925 there was very little hog-cholera, hogs were worth considerably less money than now and that thousands of hog raisers decided to take a chance and did not vaccinate—but now things are different. Three things have happened—cheap corn, high priced hogs and hog-cholera.

Thousands of the "take a chance" farmers protected their investments this year—thousands who hadn't vaccinated for years, and then came the hog-cholera. Early in June it appeared. This was unusual—cholera so early and quite widespread. The balance sent out the call for help—those who always "wait to see what will happen"—those who wait until they "hear of sick hogs in the neighborhood" and even those who "don't believe in vaccination anyway" clamored for protection, but there wasn't enough "protection" to go round. Even where protection was obtained the amount of serum required was several times that which would have been required if the hogs had been treated at weaning time.

They Had Waited Too Long

And that tells why there isn't a sufficient supply of serum to protect against the outbreaks of cholera that continue to be reported—because thousands of hog raisers called for protection this year who ordinarily do not, and of these thousands many waited until their hogs were heavy, or sick, or both.

There can be no valid reasons for expecting the serum makers to double and treble their output over normal years, especially since there can be no warning given that such excess production is needed. Production is regulated by past demand. How can the needs of farmers who buy protection only when hogs bring unusual profit, or when hog-cholera forces vaccination, be estimated?

Since there are thousands of hog-raisers who call their veterinarians for vaccination of hogs only once in every three or four years, these farmers should be the last to complain if there is no protection for them when hog-cholera strikes. Few industries could "carry on" with only a

* Abstract of address at Eastern Iowa Veterinary Association meeting, Cedar Rapids, October 13-14, 1926.

good demand for its product one year in three or four.

The percentage of farmers who have their hogs treated every year will determine how much serum is made.

How About the Veterinarian?

And then there's the graduate veterinarian whose services are so essential for successful administration of serum and virus. Should he be satisfied to be called for this work only one year in several? And, when called in years of hog-cholera epidemics, to work days and often nights, often in sick herds, to do that which might have been done earlier, before sickness appeared, to the greater satisfaction of all parties?

There are several reasons why there cannot be great differences in the amount of serum prepared each year unless early vaccination becomes widespread. About the same amount of money is now used each year in making serum. New plants are not being started because those already built can produce several times as much serum as is ordinarily used. But—the amount of serum that can be made with the money already invested in the business depends very largely on when the hog-raisers call for vaccination. This is because of the time required to make serum.

In order to make a quantity of tested serum ready for use, it requires about as much time as it takes to plant and harvest a crop of oats or rye.

About May or June the first crop of serum is ready for use. If the hog owner calls the veterinarian at that time, he uses the first supply of serum, and there is a chance to produce another. If he waits until late summer or fall, he must rely on only one crop of serum, and that crop will not protect half as many hogs as if it had been used on pigs of 40 pounds.

Early Vaccination Only Safeguard

If it is possible to produce only two or three serum crops during the year, and the hog raiser waits until the fall of the year before calling for the first crop, and if this fall crop will do only half what the spring crop would do in furnishing protection, he is decreasing from four to six times his chances of getting protection if he waits until fall to vaccinate.

Early vaccination every year is the only safeguard against hog cholera. The veterinarian should be called for this work shortly after weaning time of the pigs.

The present unfortunate shortage of serum, coupled with the enormous losses from hog cholera, should prove to the hog raiser that "the time to lock the stable is before the horse is stolen."

A little thought should convince him that it is impossible for the serum maker to increase the usual output several times over in a few weeks' time. This is what the farmer asks when he refuses to protect his hogs until cholera appears. Under ordinary conditions and with any other product the farmer would appreciate this—but you can't expect him to be reasonable when he is surrounded by cholera dead hogs, the result of his own "take a chance" policy.

If he does not wish to continue to "pay the freight" the hog raiser will have to learn to vaccinate early while his pigs are small, because as he well knows now and should not soon forget "an ounce of prevention is worth far more than a dead hog."

Ailments of Baby Chicks*

N. W. ACKERMAN, Van Horn, Iowa

DIAGNOSIS of baby chick troubles requires in about equal amount detective ability and diagnostic ability. No good results can be had in the rearing of baby chicks unless the chicks possess a high vitality which is largely dependent upon the quality of the eggs from which they were hatched, and these in turn, on the health and stamina of the flock that produced the eggs.

Hereditary weakness in chicks is very important and there is little that the chick raiser can do to overcome it and small prospect of making a profit with a handicap of hereditary weakness in chicks as a start.

Among the common faults in handling baby chicks, is the practice of feeding them too early. Literature on poultry culture says that all feed should be withheld from chicks for from 48 to 72 hours after hatching. The lower number of hours is a mistake. The very earliest time, that a chick should be fed is sixty hours after hatching and it is better to wait for 72 hours.

What is termed by the chick men "brooder pneumonia" is an important source of loss in baby chicks. It is due in part to bad methods of handling the chicks enroute from the hatchery to the brooder and in part from floor drafts in the brooder. The chicks enroute in the express car are often set near a radiator where they become overheated and more or less exhausted by it. Next, they are set, perhaps for several hours, in an express room where it is cool. Brooder pneumonia commonly follows such a practice. The symptoms of brooder pneumonia are chicks sitting hunched up, suffering from difficult respiration and dying.

A fungus pneumonia is also an important cause of loss in baby chicks. This comes from the chaff that the chicks are given to scratch in. A relatively small amount of mold in this chaff, an amount not likely to be noticed except on careful examination, is sufficient to set up a pulmonary involvement that will destroy many chicks.

There is great tendency to err in calling all forms of diarrhea in chicks, white diarrhea. Before deciding an outbreak is white diarrhea, if the breeding stock is available, a blood test of them should be made.

At ten to twelve weeks of age, a common cause of loss in chicks is coccidiosis. In this disease the cecum is filled with a bloody fluid in the early stages and later with a caseous material. The McLean County system for rearing pigs is applicable almost without change for chicks and offers the best means of preventing coccidiosis or controlling an outbreak of it; a change of soil and scrupulous cleanliness being the basis for handling this disease.

At first, chicks suffering from coccidiosis should be taken off of all feed and later be put on mash and buttermilk. Semisolid buttermilk and water in proportion of one to four is satisfactory. Giving Epsom salts with the first mash feed at the rate of one pound of Epsom salts to 400 pounds of chicks is a good preliminary treatment for coccidiosis. The buttermilk-mash-Epsom-salt treatment is much to be preferred to the copper sulphate in water advocated by some of the poultry experiment stations.

Although poultry growers are beginning to understand the matter better, there are still heavy losses in chicks from rickets, leg weakness or malnutrition. This is due to a lack of vitamins in the

* Abstract of discussion at Eastern Iowa Veterinary Association meeting, Cedar Rapids, October 13-14, 1926.

food and is to be overcome and prevented by feeding chopped green feed if available or cod liver oil, and by getting the chicks into direct sunshine. Malnutrition also sometimes gives rise to a type of roup, not the ordinary roup of adult birds, but a condition having similar symptoms. Malnutrition likewise often causes perverted appetite that leads chicks to eat carpet tacks, shoe strings and all manner of objects that injure them.

Cholera and typhoid are not so common in baby chicks as in older birds, but when present is very fatal. Tapeworms are very destructive and gape worms so bad that, as in the case of tuberculosis in a flock, an owner will do well to get rid of all the birds, plow up all the yards and runs and after a year make a new start.

For the external parasites, cleanliness of roosts, runs and houses is the proper preventative. Lice can be controlled by greasing the back of the heads with unsalted lard. Mites can be controlled by dusting the birds with sodium fluorid and painting the quarters with kerosene.

In the raising of baby chicks, sanitation is all important and chicks of different sizes should not be allowed to intermingle. All cripples and weak chicks should be removed as quickly as they can be detected and the bodies should be destroyed by burning. It is these weaklings that give parasites and bacterial infection an opportunity to increase in the flock and to acquire virulence.

Caponizing*

J. W. VANSANT, University of Pennsylvania

CAPONIZING is the term used when referring to the surgical operation performed for the purpose of unsexing male chickens. When a chicken has been caponized it is referred to as a capon.

A capon has the same economic advantage over a rooster as a steer over a bull; that is, they are not as active; they require less feed per pound of gain; the meat has more quality, and brings a higher price. These reasons are sufficient to make the production of capons a profitable enterprise.

Caponizing is not a new operation. It was practiced by the ancient Chinese. It has not been popular in this country, probably because the demand was small and veterinarians have been unwilling to do it. However, since our profession is becoming more interested in poultry practice, and people are beginning to recognize the superiority of this product, we predict that veterinarians will to their profit perform this operation more extensively.

The capon market is best after the Christmas holidays. Therefore, capons should be produced so they will reach their maximum weight at this time.

The most of my caponizing is done for people who own from fifty to two hundred cockerels.

Birds are usually operated on as early as the sex can be determined, or when they weigh from one to two pounds. This will depend on the breed. The Mediterranean breeds are operated upon earlier than others. It is possible, but not advisable, to perform this operation on birds smaller or larger than these weights.

To prepare cockerels for the operation, they should be fasted for thirty-six hours. For example, if the operation is to be performed on Wednesday morning, the chickens are caught Monday evening after feeding and placed in a clean, dry room with cement or board floor. I do not want them to scratch or eat dirt. They may have water to drink until Tuesday noon, or about eighteen to twenty hours before the operation. It is necessary for them to have water, because they are likely to become too much

* Veterinary Extension Quarterly, October 2, 1926, University of Pennsylvania, Philadelphia.

weakened without it. This is especially true in hot weather.

The necessary equipment is a table, two feet by four feet, arranged so one can operate on either end. The instruments are placed in the middle of the table. Two weights each weighing from twenty-four to thirty-two ounces are required. If we have an assistant, we should have four weights. Each weight has a cord two feet in length attached to it, with a small hook on the free end.

I have tried many instruments, but prefer the following:

1. One small scapel.
2. One small tearing hook.
3. One retractor.
4. One straight probe.
5. One spoon.
6. One cannula.
7. One small gauge steel wire.
8. One pair dissecting forceps.

The cannula should be flattened and have no partitions so the wire can be pulled through to cut off the testicle. The chicken is held under the left arm and the cord with hook passed twice around its legs, just above the foot on the left leg and just above the hock on the right. This brings most of the tension on the right leg and helps to pull the thigh or extensor muscles back, thus making it easier to penetrate the abdomen posterior to the ribs.

So far as I know, all other operators make their incision between the last two ribs. I find it better to make the incision posterior to the last rib. The mortality is considerably reduced by this method.

The bird is placed on the table on its left side. The other cord is passed once around its wings one to two inches from the body. We then dampen feathers and remove those over the point of operation, which is determined by locating a depression posterior to the last rib, and about one inch from the spine. This point corresponds to the triangular area in the flank of cattle. With the left hand, we slightly stretch the skin posteriorly and make an incision one inch long parallel to the ribs and over the center of the depression mentioned above. This will come just under the edge of the extensor muscles of the thigh. We then take the tearing hook and catch the edge of these muscles, pulling them back so that we may have a clear view of the abdominal muscles. Next we make an incision in the abdominal muscles, an inch long, beginning at the inferior end of the incision in the skin, giving a little thrust through and cutting toward the superior end and outwards so we will not puncture the intestines. Still holding the muscle back, we place the retractor in the wound. It is advisable at this point to remove any blood that may have collected before we puncture the peritoneum. This membrane, when cut, gives us a very clear view of the upper or right testicle, and the left one can be seen through the mesentery. The mesentery is next torn through so as to give free access to the lower testicle. This is the most dangerous and exacting part of the operation and is performed as follows:

With the probe in the left hand, we draw it down over the omentum to make it tense and bring to view a triangle, the base being formed by a large vein running just under the spinal column. The anterior border of the triangle is formed by an artery running downward and backward, crossing a vein which seems to run downward and forward. While the membrane is tense we push the point of the sharp hook through the omentum near the apex of the triangle, thus making a small hole. The probe may now be pushed through this hole and drawn downward to hold the membrane tense while we pick the membrane with the tearing hook near the superior or large vein under the spine, and tear an opening large enough to work through. Never slide the hook along, taking a chance of it puncturing the membrane, because it will meet with a blood vessel and puncture it. If any of these blood vessels are punctured it is very likely to kill the bird.

With both testicles in view, I place the spoon under the lower one. This holds the intestines back and reflects more light on the testicle. We now place the snare—the wire of which runs through the cannula—around the lower testicle. The wire is pulled

through the cannula and the testicle cut off. Care should be taken to get it all. None of the loose membrane should be included, as it will make the operation more difficult.

The testicle will drop into the spoon and can be lifted out. The same operation is then performed on the upper or right testicle. We should be very careful not to crush the testicle, thus leaving a small particle of the gland. A small portion of the gland will have the property of secreting hormones which will cause the development of the comb, make the bird crow, and in other respects resemble a rooster. Such a bird is referred to as a slip. Small portions of the testicle can be removed by a pair of dissecting forceps, care being taken not to take hold of the blood vessels.

Care must also be taken not to tear a thin membrane which has the same position as the diaphragm. This is the wall of an air sac and if ruptured frequently causes the death of the chicken from suffocation.

When the bird is released, the extensor muscles of the leg completely cover the incision made in the abdomen, thus protecting it from infection. A day or two after the operation we often see a few birds puff up with air, which I suppose works out under the skin from some of the air sacs in the body which have been torn. This can generally be taken care of by lifting the scab or by making an incision about one-half inch long in the skin to give exit to the air.

If care is used, and the birds properly prepared, the percentage of mortality ought not to be more than one per cent. If roup or other infectious disease is prevalent in the flock, the loss may be as high as ten per cent.

The Eastern Iowa Veterinary Association

THIRTEEN years ago, at Davenport, Iowa, a group of veterinarians from the surrounding territory assembled and organized the Eastern Iowa Veterinary Association. At the time, there was nothing to indicate that this association was different or was going to be different from the large number of other county and district associations existing at that time, and organized since, but somehow it was different. While perhaps nine out of ten local veterinary associations organized from five to fifteen years ago, have discontinued at this time or changed their organization or missed meetings, the Eastern Iowa Veterinary Association has progressed steadily until now its meetings are as well attended as the meetings of the Missouri Valley Veterinary Association and better attended than perhaps sixty per cent. of the state association meetings.

To the visitor, the annual meeting of the Eastern Iowa Veterinary Association, its remarkable appeal to veterinarians of the section included in this territory, and the loyalty to the association of its members, are no surprise. The association has done much for its members.

The thirteenth annual meeting held at Cedar Rapids, October 13th and 14th, was attended by 174 veterinarians and 86 women. The interest of those attending in the program exceeded that of most veterinary meetings. Practically every paper presented was discussed from the floor to the full limit of the time available, and the range of subjects presented at the meeting and the eagerness with which all were discussed was proof that the veterinarians of eastern Iowa are interested and informed widely in the field of veterinary practice.

For example, there was little difference in the amount of discussion accorded a paper on "The Diseases of Young

Chicks," another on "Colics in the Horse," another on "Swine Vaccination" and a fourth on "Contagious Abortion in Cattle," the discussion on all four having to be closed by the president for lack of time.

The Hog Cholera Situation

Owing to the widespread outbreak of hog cholera and its virulence at this time in Iowa, it was natural that the veterinarians at this meeting would be interested most of all in ascertaining when and where serum is likely to be available. At the opening of the meeting, Dr. H. E. Curry of the Universal Serum Company, Wichita, Kansas, was called upon for some information as to the present status in the serum situation. Dr. Curry stated that there was an acute and unsatisfied demand for serum over a considerable area and that the situation in Minnesota was probably more serious than in any other territory that he had visited. He thought considerably more serious than that of eastern Iowa. He stated that in order to relieve the situation, the U. S. Department of Agriculture had recently reduced the time required for testing serum from twenty-one days to eleven days and as there was probably 75,000,000 cc. of serum now in the process of production, that this action on the part of the Department would make at least that amount available ten days earlier than otherwise, and if the present hog cholera situation continued, would be the means of saving a vast number of animals.

Dr. Curry stated that there was much profiteering in serum going on, but that it had not been indulged in by many of the larger responsible companies. Certain companies, however, are proclaiming their inability to supply their regular customers with serum, and at the same time are supplying jobbers who retail the serum at about 3c a cc. He stated that the demand was so acute at present that every bit of serum on hand and to be produced for some weeks to come could be sold at this price, and that the temptation to get the money and get it quickly had proved too severe for the morals of some producers.

President's Address

In his annual address, President J. C. Glenn recommended that the association be incorporated; that the term of office of the president and secretary be increased to two years and arranged to expire on alternate years, so that the administration of the association might possess some sort of continuity and the incumbent of one or other of the offices be at all times an experienced official. He recommended that the weekly bulletins of the publicity committee be continued, and stated that in his opinion, these weekly bulletins of the publicity committee had had much to do with preparing the veterinarians of eastern Iowa to meet the situation growing out of the present epizootic of hog cholera and the acute shortage of anti-hog-cholera serum, so that eastern Iowa was now in better shape so far as hog cholera was concerned than any other part of the state. By reason of the general dissemination of information concerning hog cholera at the beginning of the outbreak, the veterinarians who were members of the association had from one to six weeks start on those in other sections who were not so quickly informed of the present outbreak of hog cholera.

Baby chick troubles, discussed by Dr. N. W. Ackerman, proved very interesting to the associtaion. This discussion may be found on another page in this issue.

Mr. G. H. Williams, president of the Corn States Serum Company, was requested to discuss the serum situation. His response may be found elsewhere in this issue.

The Hon. M. G. Thornburg, secretary of agriculture for Iowa, addressed the association reviewing the hog cholera and serum situation in the state and telling what the Department of Agriculture was doing to get serum distributed to the lo-

calities where it was most needed and of the Department's petition to the U. S. Department of Agriculture to reduce the test period for hog cholera serum during the present emergency or to waive the test altogether for serum companies that would assume responsibility for the purity and potency of their serum and virus.

Tuberculosis Eradication

He spoke to some extent of the Iowa veterinary practice act and of violations of the act, reviewing the difficulty in obtaining evidence of violations and of getting convictions where evidence was obtained. He stated that the tuberculosis eradication project was the biggest task before the State Department of Agriculture, that already 52 of the 99 counties in the state were carrying on county area work and that eight counties were just started making almost two-thirds of the counties in the state who had started county area testing in less than three years. Two counties are now modified accredited areas and three more will be recommended for this class before the first of November, and between then and the end of the fiscal year, they expect to add enough counties to make approximately thirty in all or nearly one-third of the counties in the state in the modified accredited area. Iowa has been testing cattle for tuberculosis at the rate of almost one million and a quarter a year. The number for 1926 will not be quite that great because of unfavorable weather conditions of the past few weeks and perhaps to an even greater degree, because the acute outbreak of hog cholera has reduced the number of veterinarians available for testing.

He reported the findings of the Supreme Court on what is known as the Webster County case. The first ruling of the court on the question as to whether or not the Department of Agriculture had authority to carry on the compulsory tuberculin testing necessary in county area work. The Supreme Court held that the legislature has the authority to require compulsory testing of cattle for tuberculosis as a public health measure and that the action of the Department of Agriculture has been reasonable in carrying out this work. It also upheld the authority of the Department of Agriculture to control the distribution of tuberculin and to restrict its lawful use to licensed veterinarians.

B. A. I. Investigation of Hog Cholera

Dr. T. B. White, of the Division of Hog Cholera Control of the Bureau of Animal Industry, Washington, D. C., stated that he had been sent out from Washington because of reports of deplorable conditions resulting from the widespread outbreak of hog cholera. That he had found the conditions bad, but of course as was to be expected, not nearly so bad as reports indicated. That in Iowa, the conditions were still very bad in the northwest part of the state, but he believed that the crisis had been reached and that matters were on the mend in eastern Iowa. He stated that the object of his visit was to obtain all the information possible regarding the hog cholera situation and he would appreciate very much if every veterinarian present would give him an approximate figure on the loss in his district from hog cholera since the first of June, the amount of vaccination that had been done and the number of hogs for which there is a demand for vaccination, that can not be performed because of lack of serum. He stated that as usual, the pill peddlers were reaping a harvest in the infected territory and held that they were probably responsible for some spread of the disease.

Reactors to Tuberculin

Dr. A. M. Casper, in charge of the U. S. Bureau of Animal Industry at Cedar Rapids, discussed the subject of "Lesionless Reactors" and stated that perhaps one explanation of lesionless reactors found on a retest was that the first injection of tuberculin sensitized the animal to a degree where tuberculin would de-

tect tuberculosis in its very earliest stages when no lesions were to be found. He recited an experience in Chicago where a test was made by feeding a number of animals a very large quantity of culture of tuberculosis germs. These animals reacted to the tuberculin test promptly. Some of them autopsied immediately after the test did not show lesions and reactors held for ninety days after the test and then autopsied showed a much higher percentage of lesion cases. Those held six months after the reaction all showed lesions.

Dr. Casper also discussed the salvage of cripples, stating that in the case of small animals, it was more profitable that they be slaughtered promptly on the premises or at local slaughtering houses. Larger animals could in some instances with profit be sent to abattoirs but the temperature should always be taken before such animals were shipped since a temperature as high as 106 would inevitably cause the condemnation of the animal and the loss of the transportation on it. He stated that sheep injured by dogs had been condemned on antemortem inspection after as short a period as ten hours.

Veterinary Publicity

Mr. Ney W. Brooks gave in some detail a report of the activities of the Publicity Committee during the year. To assist the regularly appointed committee in its work of getting statistics regarding the prevalence of animal diseases in eastern Iowa and distributing information to the public, the president appointed a subcommittee of ten. In general, the committee distributes to all members of the association government postal cards addressed to the secretary of the committee and containing on the back a blank to be filled out by the veterinarian. One of these cards is to be mailed to the secretary of the committee each week, and in no case later than Thursday. It is to give a summary of the animal morbidity and mortality in the region. These reports are compiled in the office of the secretary and a weekly bulletin prepared on the animal disease situation for the use of newspapers and copies are sent to all members of the association.

Small weekly papers are supplied with statistics regarding diseases within a twenty-mile radius of their office of publication. The larger weeklies and all daily papers in the region are supplied with the complete bulletin dealing with the disease situation over the entire area embraced by the association.

The press of eastern Iowa gave these bulletins a great deal of publicity, three column heads being common over the stories. The bulletins were published in an average of 150 papers a week. The weekly cost to the association for postal cards was $5.00 and for postage on material mailed to papers, $8.00. The efforts of the association in this matter received editorial comment in many of the papers, all of it favorable. No member of the association or of the committee was permitted to give out information to the papers except through the secretary.

Dr. L. A. Merillat of Evanston, Ill., discussed the report of the committee, and stated that the veterinary profession in Germany, under the monarchy a subsidized profession of the highest standing, was under the republic meeting with just the difficulties of the profession in America. He stated in this country the first medical diploma was issued at Philadelphia in 1778 and the first veterinary diploma at Ontario nearly one hundred years later, that is in 1865. That the agricultural leaders do not understand the profession and its work, that the live stock industry of the country needs the veterinary profession, and to encourage it, all except the qualified should be curbed. He stated that he had always been a champion of local veterinary associations and had seen much good come from them. He commended the Eastern Iowa Veterinary Association for its publicity and said the work done by the Eastern Iowa Veterinary Association was directly responsible for the work of the

A. V. M. A. in the same line and that the Cahill policy adopted by the A. V. M. A. was a direct outgrowth of the policy of the eastern Iowa association who furnished the ideas for it and the example. He said the veterinary profession of America had no apologies to make for the qualifications of its members or of its attainments.

Dr. C. H. Stange, dean of the veterinary department of the Iowa State College, stated that he questioned the advisability of being too well satisfied with our present attainments and the question is not whether or not we are progressing, but whether or not we are progressing as fast or faster than the agricultural and live stock industries. He spoke of the vast amount of information that has been placed in the hands of these classes in recent years and of the progress that is being made in better methods of animal breeding and feeding. He stated that the desire on our part for more information was the only thing that would justify our asking for additional appropriations for research work.

Dr. E. R. Steel, secretary of the Iowa Veterinary Medical Association, discussed the report of the Publicity Committee, and what is being done by the state association to the same end. His discussion will be found elsewhere in this issue.

Suggestions for Practice Building

Dr. Henry Hell, chairman of the Publicity Committee of the Eastern Iowa Veterinary Association, presented a paper on "Practice Building," stating that no one who, like himself, had been in practice for more than twenty years, thinks that he knows all about it or can give any sure method. Conditions are always changing, advancing or declining. A lack of adaptability to meet changes in conditions was perhaps the greatest handicap that a veterinarian could have in building and maintaining a practice. He stated that a reputation for ability, reliability and fair dealing, in other words, good will is the most valuable possession that a veterinarian can have in building a practice. In a small town, conduct is very important. In such a location and in fact in all locations, he advised the practitioner to give minutest care to his medicines and his instruments, to keep his office clean and attractive. He agreed with the governor who said that intelligence was the graetest asset of the people of his state, and ignorance the greatest liability. He thought that the federal and state forces should put more stress on education. He did not consider it unethical to mail clients literature from time to time that he thought contained information that would be useful to them even though this information took the form of a circular letter.

The discussion of small animal practice by Dr. D. A. Eastman took pretty much the form of a question box and answers. An account of it will be given at another time, together with a report of the question box at this meeting, which was in charge of Dr. A. T. Kinsley.

The Veterinarian and the Law

Mr. Geo. Judisch, member of the Iowa Board of Pharmacy Examiners and a member of the legislative committee of the Iowa Pharmaceutical Association, discussed the subject of The Veterinarian and the Law. It is the duty of the Pharmacy Board to enforce the pharmacy law in Iowa, including the vendor's act, which requires all peddlers of live stock or other remedies to pay a license fee of $100.00. Mr. Judisch related that when the Pharmacy Board got all ready with their prosecution of a vendor for selling pink pills for pale pigs, the vendor set up the defense that he was practicing veterinary medicine and prescribing these preparations in connection with his practice, and the Pharmacy Board was compelled to drop the prosecution. Later, if the same man were prosecuted by the Department of Agriculture for violation of the veterinary practice act, he would set up the claim that he was a peddler merely selling his remedies and making no charge

for administering them, and the prosecution would fail.

He urged that the veterinary practice act be strengthened. He gave considerable advice to the association about methods of obtaining desirable legislation from the state legislature and offered his cooperation in any efforts along this line that the association might undertake.

Colic in the Horse

Dr. J. W. Griffith, for thirty-five years, a practitioner in Cedar Rapids, discussed the subject of colic in the horse. Dr. Griffith's discussion covered the various types of colic and recited a number of severe cases that have occurred in his practice, and described the treatments used. The subject was discussed by many members of the association and was greatly appreciated by all.

Surgery

The program was closed with a lecture by Dr. H. E. Bemis, professor of surgery at the Iowa State College. Dr. Bemis' lecture was illustrated by lantern slides and does not lend itself well to reproduction without the slides. Dr. Bemis stated, however, that he disapproved of any tendency on the part of general practitioners to neglect surgery, that surgery was a thing that the owner of the animal could see. When a surgical operation was performed on one of his animals, he knew that something had been done and he was able to determine rather promptly whether the results were good or bad, and that no other branch of veterinary medicine was the equal of good surgery in bringing the practitioner to the notice of his prospective clients, and nothing else advertised him in a community so quickly.

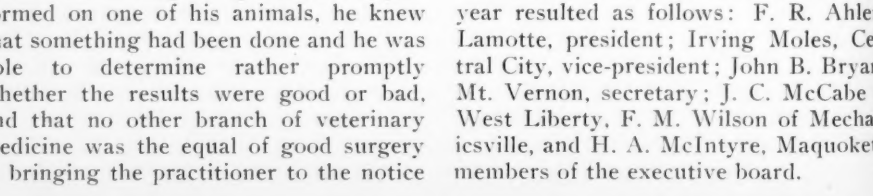
Dr. Bemis stated that surgery was distinctly a practice builder of the first order; that in almost all communities there was an opportunity for the veterinarian who wished to specialize somewhat in surgery and do it a little bit better than his confreres did it, to get a good deal of work from them, and to have referred to him a good many cases that they did not care to undertake, with a very appreciable addition to his income as a result.

Dr. R. C. Moore of St. Joseph, Mo., presented a very interesting discussion on "Surgical Diseases of the Cow," which was discussed by various members of the association.

Banquet and Election of Officers

The banquet held the evening of the first day of the meeting at the Montrose Hotel was a wonderfully enjoyable affair, the attendance considerably exceeding 200. A program of singing and instrumental music with some vaudeville skits furnished the entertainment. After the tables were cleared away, dancing furnished entertainment for the members and their wives until a late hour.

The election of officers for the ensuing year resulted as follows: F. R. Ahlers, Lamotte, president; Irving Moles, Central City, vice-president; John B. Bryant, Mt. Vernon, secretary; J. C. McCabe of West Liberty, F. M. Wilson of Mechanicsville, and H. A. McIntyre, Maquoketa, members of the executive board.



ICTERO-HEMOGLOBINURIA IN CATTLE

Recently I have encountered a disease among cattle, the cause of which I have been unable to ascertain. So far three farmers have had cattle affected. Two of the owners are neighbors and the other lives some five miles away.

The symptoms shown by the animals are dullness, weakness, fever, advanced anemia, quickened pulse, inclination to lie down, complete loss of appetite, very little thirst, with death resulting in about forty-eight hours. Another symptom noticed which happened to be the first indication of trouble and positive evidence of the disease was the marked reddish discoloration of the urine.

Up to date (Sept. 14th) there have been fifteen deaths, and there are now four more sick. On September 12th I treated one sick animal giving hemorrhagic septicemia vaccine and a good purge of Epsom salt and sodium chlorid with one dram of fluid extract physostigma. The owner told me today that the cow seemed perfectly well. The other cases I saw only last night and am giving them a similar treatment.

However, I had a government inspector examine one carcass, and he said he could not pronounce the case hemorrhagic septicemia. These animals had been pasturing in the woods, and the only plants there that might be poisonous were mushrooms in great numbers and of many varieties. I should like to know if poisonous mushrooms are eaten by cattle and what the symptoms are. Whatever the trouble is, one thing is certain, it causes a hemolysis.—H. R. M.

Reply by A. T. Kinsley: From your description, it is probable that the cattle in question are affected with ictero-hemoglobinuria or red water disease. This malady is more or less prevalent in the western part of the United States, extending from Nevada up through Oregon and Washington, and it has also been reported in Alberta.

Ictero-hemoglobinuria is manifested by inappetence, cessation of elimination and milk secretion. The affected animal usually stands apart from the remainder of the herd, has its back arched and evidences marked gauntness. The eyes are sunken, respiration is usually slightly accelerated, and there is frequently a characteristic grunt accompanying the expiratory movement. The visible mucous membranes are more or less icteric. In the early stages there is usually a rise of temperature, and in some cases it reaches as high as 106°F. The venous pulse is usually pronounced; urination is frequent and copious. There is usually considerable hemoglobin pigment in the urine. Affected animals generally die in from one to three days.

On portmortem examination of cattle dead of the disease, a marked anemia is found. Rigor mortis develops rapidly. The carcass is usually markedly icteric, and numerous petechial hemorrhages may be found in the sub-cutis. There is an increased amount of hemorrhagic exudate in the abdominal cavity, usually extensive ecchymosis in the omentum. The serous membranes of varying portions of the intestines are red in color. The wall of the duodenum may be thickened and edematous. The liver is always enlarged and engorged with blood. The kidneys are usually dark in color and have numerous petechial hemorrhages. The fluid in the thoracic region is tinged with blood and may be increased in volume. Petechial hemorrhages in the pleural structures are not usual.

Relative to treatment, thus far no remedial agent has been found and the mortality is 90 per cent or more.

Because of the prevalence of breeding diseases, Eckles has estimated that it was necessary to replace breeding herds every five years. Government figures show an 18 per cent yearly loss. What an unfortunate condition! This means that the average cow can be expected to produce only three calves. —Comstock in Animal Pathol. Exch., Univ. of Ill.

FERRIC PERCHLORID FOR OPEN JOINT

I suppose, like every other complaint, every veterinarian has his own method of treating open joint, and there are many remedies advertised and advocated. Probably this one has been written up before in Veterinary Medicine, but not to my knowledge.

I have tried a good many treatments, but this method gives me by far the best results, and results certainly make it easier for us to say, "$5.00 please."

Two years ago in October, I was called to see a bad case of open stifle joint after it had been treated for several days rather unsuccessfully by another veterinarian.

I carefully washed the wound and probed it for any foreign matter that sometimes gets pushed in, if due to a kick. I then made a cotton swab just large enough to pass into the opening freely and saturated it with ferric perchlorid. I used three or four of these swabs, making sure that the wound was well soaked with the solution.

I left a bottle of ferric perchlorid with the owner with instructions to repeat the treatment every hour all day and every four hours at night, not to wash the wound, but to remove just enough of the hardened exudate that forms on the outside so it would not interfere with the passage of the swab, and to tie the patient so it could not lie down. I have had some rather disastrous results by allowing the patient freedom enough on the halter rope to lie down.

The patient was seen the next morning and showed slight improvement. Instructions were given to continue the same treatment, and if noticeable signs of improvement appeared in the morning, to repeat the dressing every two hours.

I called the owner up the next day about noon. He was well pleased and said it would not be necessary for me to call until he notified me. He came to the office a few days later for more medicine and informed me that the patient was doing fine. As the animal did not appear very lame in that leg, he had started giving her a little exercise. That was six days after I had seen the mare. She made a complete recovery.

I have had many cases of all kinds and joints since then, and I have followed this line of treatment, of course, varying it to suit the case. It gives quick results and cures a very large percentage of cases. It can be used on suspicious cases, where one is not sure that joint ill is present. It seems to be a good healing lotion as well. I hope it may prove as valuable to some other practitioner as it has to me.

Aylmer, Ont. H. J. Davis, B.V.Sc.

USE OF ANTI-HOG-CHOLERA SERUM AND VIRUS*

1. Should serum alone be used in a herd affected with necrotic enteritis?

A. T. Kinsley: Yes. Ninety-eight per cent of the trouble in vaccinated herds is due to using virus when acute necrotic enteritis is present in the herd.

2. What is the minimum dose of serum, and what is the minimum age at which pigs from immune sows can be successfully vaccinated?

Henry Hell: Twenty cc. of serum. Four weeks of age.

W. P. Bossenberger: As a test I gave a number of pigs, five days old, 20 cc. of serum and 2 cc. of virus. Six months later I gave them 8 cc. of virus, and they didn't miss a meal.

A. T. Kinsley: Such results are uncertain. Very young pigs from immune sows can be immunized in perhaps 95 per cent of the cases. But the man that follows this practice is due for a whole lot of trouble sooner or later. Reynolds of Minnesota demonstrated that several years ago.

C. H. Stange: We keep several hundred head of hogs at the state farm immunized. We formerly had a great deal of trouble from necrotic enteritis. Four years ago we began vaccinating our pigs

* From report of meeting of the Eastern Iowa Veterinary Medical Association, Cedar Rapids, October 13-14, 1926.

when they were very young, and the trouble from necrotic enteritis practically disappeared. I am satisfied that if we can vaccinate at from three days to one week of age, much later trouble will be avoided.

3. What is the proper dose of virus for a week-old pig?

W. F. Brownlee: One-half cc.

Henry Hell: Never give less than 2 cc. of virus to any animal if you give it virus at all.

THE HOG-CHOLERA SITUATION

The question has been asked: Why is hog cholera more prevalent in some states this fall than it has been at any time since 1913? The history of the disease in this country indicates that if the natural trend is not interrupted by effectual preventive measures, it becomes unusually prevalent and destructive in certain periods. The first period of exceptional prevalence reached its climax in 1887, when it was estimated that 120 per 1,000 of our hog population died of hog cholera. The next extensive outbreak occurred in 1897, when the loss was approximately 130 per 1,000, and the third outbreak in 1912 and 1913 resulted in a loss estimated at 106 per thousand. Following the severe experience of the 1912 outbreak, most hog growers began to immunize their herds quite regularly with the result that the mortality from hog cholera was gradually reduced from year to year until the fiscal year 1925, when it was only 30.8 per 1,000.

About 80 Per Cent of Hogs Susceptible

During the last five or six years there has been comparatively little hog cholera in this country. The outbreaks that did occur usually were checked promptly through the use of the immunization treatment and the application of sanitation measures. From year to year more and more farmers ceased to immunize their herds, thinking there was no necessity for incurring this expense, and breeding stock that had been immunized or had acquired immunity through an attack of the disease was gradually replaced by susceptible animals. It is estimated that as a result of these conditions 80 per cent of the hogs in the country were susceptible when the present outbreak began to assume a dangerous aspect in some states during the month of September. The large number of highly susceptible animals was conducive to a rapid and destructive wave of the disease again, unless checked by the liberal use of anti-hig-cholera serum.

Heaviest Losses Since 1913

Unfortunately serum producers were not able to supply sufficient serum in time to prevent the heaviest losses the swine industry has sustained since 1913. With the reduction of hog cholera in the country during the last several years and the discontinuation by most farmers of the practice of immunizing their herds, there was a reduction in production of serum. No large reserve supplies were carried and some of the largest producers had given up the business.

The seriousness of the situation was realized by hog growers, serum producers, state officials, also by the Department of Agriculture, which is charged with the responsibility of supervising the production of anti-hog-cholera serum intended for use in interstate trade. In view of the emergency everything possible within the bounds of reasonable safety is being done to increase production and facilitate the delivery of serum to those who need it.

Washington, D. C. U. G. Houck.

At a veterinary conference held last year in Germany, several hundred of the leading veterinarians of Germany, Austria, and Switzerland were present. They reported on 53,000 cases of sterility, an increase over the preceding year of 14,000 cases. Only 35 per cent of the cases yielded the Bang organism. However, a report on conditions in Saxony brought out the fact that 74 per cent of the cases yielded the Bang organism.

HOG CHOLERA IN MARYLAND

The disease was reported to exist on 228 premises during October against 56 a year ago, and a 7 year average of 106 for the same period. 212 were classed as primary or new outbreaks, and 16 as secondary or spread of the infection. 153 were of the backyard type, while 75 occurred on farms where hogs were bred and raised.

Of the 212 primary outbreaks 191 were apparently due to the feeding of infected pork in garbage, table scraps, etc. 3 were due to the introduction of infected stock, while in 18 cases no history was obtained on which to base the source of infection. Of the 16 secondary outbreaks, 4 were due to permitting hogs to run at large or to line fences, 2 were possibly due to visiting, and in 9 cases no history was obtained on which to base the source of infection.

On the premises where hog cholera was reported to exist, during the month there were 2844 hogs. Of these 949 were sick and 325 were dead when the cases were reported. In 99 of the outbreaks only 5 hogs or less were involved.

To date hog cholera has appeared this year on approximately ½ of 1% of the farms in Maryland where hogs are bred and raised.

Quite a number of owners of swine demonstrated this fall that they did not care to observe the few and simple precautions recommended in the Maryland Plan for the protection of their hogs. The shortage of serum with the consequent high price did not contribute to their peace of mind. The saving of one hog would have repaid the cost of keeping infected pork out of the hog feed for a life time.

Hog cholera history in Maryland is repeating itself this year. In 1923, as in 1926, Maryland had very little cholera for the first nine months of the year, while the Corn Belt States had quite an extensive outbreak. When the snappy days of fall that year stimulated the purchasing and use of pork, the outbreaks of cholera increased until the last three months of the year turned in more outbreaks than had ever been reported before for the same period. It is also worthy of note that there was a marked increase of the disease in the state clear through the smoked meat season of 1924. This year, until September 15th, Maryland had the smallest number of outbreaks ever recorded for the same period, while the Corn Belt States have the most extensive outbreak of the disease experienced since 1913. As was predicted by this office in June, when the extensive use of purchased pork was started this fall, the outbreaks of cholera began to jump and from September 15th to October 31st, more outbreaks of the disease have been reported in Maryland than for any similar length of time. It is also reasonable to suppose that we will experience more than the average number of outbreaks down through the smoked meat season of 1927. To an innocent bystander it would appear that the simple method of preventing the infected pork from reaching the hogs would have done far more good than standing around complaining about what a terrible disease hog cholera is.

College Park, Md. I. K. Atherton.

ROUNDWORMS IN HEN EGGS

I should like you to advise me if possible your opinion as to whether or not the larva of the large roundworm that infests chickens could in any way find its way to the egg which the fowl lays, and later the larva develop into a mature worm and be found as such when the egg is broken?—J. E. S., Ia.

Reply by A. T. Kinsley: The occurrence of mature roundworms in hen eggs has been previously reported. It has been assumed that the mature parasite migrates up the oviduct and becomes incorporated in the white of the egg during the formative period. It is possible that the larva may migrate up the oviduct and gain entrance to the formative egg and whether or not the parasite matures will depend upon the temperature at which the egg is stored.

Perhaps some other readers of Veterinary Medicine have some suggestions relative to this interesting inquiry.

MALFORMATION OF THE EXTERNAL GENITALIA AND ANUS OF A PIG

The subject discussed in this report is a pig obtained from the hospital museum and preserved in 10% formalin solution. It is unfortunate that it is only a portion of the animal, the right posterior limb (see Fig. 1), which is saved; this makes the description rather incomplete. However, since malformations of the genitalia and anus are uncommon, the writer has taken advantage of the material and presents it in this paper.

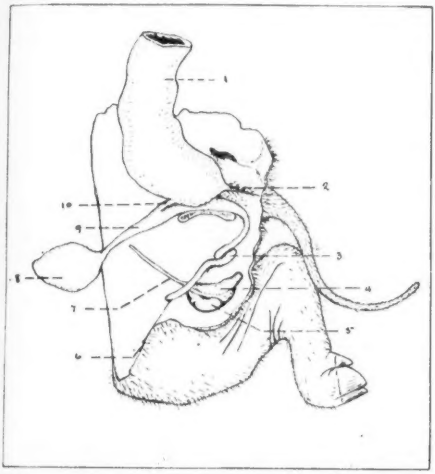


Fig. I. 1.—rectum; 2.—connective tissue cord; 3.—sigmoid flexure; 4.—tunica reflexa; 5.—testis; 6.—penis; 7.—spermatic cord; 8.—urinary bladder; 9.—urethra; 10.—fistulous tract.

The pig was admitted in the clinic some two years ago with the complaint that it could neither defecate nor urinate. The animal was greatly bloated. From the appearance of the specimen it is a two to four days old shoat.

Externally just below the base of the tail is a small hairless area with a median corrugated groove, which marks the anal site. The preputial orifice cannot be determined as the material is limited.

Internally the rectum is the outstanding organ. It terminates in a blind pouch and measures four and one-half centimeters at its widest diameter. A connective tissue cord, three and one-third centimeters long, connects the rectum with the anal site. The impervious cord-like structure is adherent to the muscles below the last portion of the sacrum and the first two or three coccygeal vertebrae by minute threads of radiating connective tissue. It tapers from its point of origin towards the anal site. The mucosa of the rectum does not show any depression at the origin of the cord.

Hogan (Veterinary Medicine Vol. XX, No. 2, p. 69) classifies malformation of the anus or atresia ani into three different types and this case falls under the third. However, Ziegler (General Pathology—eleventh edition 1904, p. 524) claims that when the rectum does not terminate at the anal membrane but higher up, besides atresia ani there exists another condition, atresia recti, a malformation which may take place even when the anus is normal.

At the ventral surface of the rectum, about one centimeter from the pecten pubis, is a small fistulous tract joining the rectum and the urethra, at a point five centimeters from the neck of the urinary bladder. It measures one centimeter long and half as long as its width. It opens at a diverticulum in the rectal mucosa.

Ziegler (General Pathology—eleventh edition 1904, p. 525) cites instances in human subjects where there are found tubular communications between the rectum and the

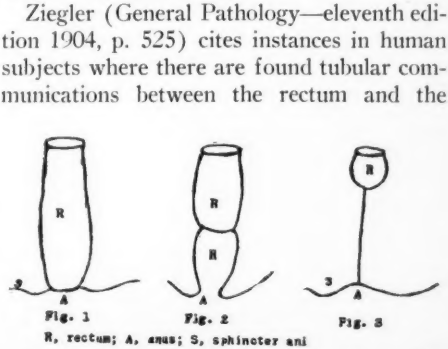


Fig. II. Classification of atresia ani by Dr. J. H. Hogan, Escondido, Cal. In Fig. 1 the rectum and anus are normally developed, but there is a failure of the cutaneous septum to absorb and occlusion results. In Fig. 2 a transverse membrane separates the posterior from the anterior part of the rectum. This membrane is from 3 to 5 inches from the anus. In Fig. 3 the rectum terminates in a blind pouch at a variable distance from the anus, and between the pouch and the anus, the rectum is represented by an impervious mass of fibrous tissue.

vagina or uterus, or between the rectum and the bladder or urethra (in boy). These he names accordingly: atresia ani vaginalis, uteralis, vesicalis and urethralis. Then this condition comes under the latter.

The penis presents the sigmoid flexure which is formed below the floor of the pelvic bones and about five centimeters from its free end. From all indications it is stunted in its development. It is ten and one-half centimeters in length, when stretched from the ischial arch to the end and one-half centimeter in diameter. At the free end is a tiny opening which is faintly discernible and marks the external urinary meatus.

From the comparative length of the male genitalia with the size of the specimen, it may be safely stated that it is impossible to reach externally and that the preputial orifice possibly is not present, although the organ presents a normal structure.

Only one testicle is left. The scrotal sac is clearly seen and presented by wrinkled integument. The testis is found descended in the sac and has almost the size of a lentil seed, although oval in outline. The spermatic cord remains intact.

Manila, P. I. L. M. Yutuc.

OCULAR DISTURBANCE IN PIGS

Recently a client came to me and stated he had some forty suckling pigs that would apparently go blind and then die. On investigation there were only two pigs of the original forty that were alive and one of them was blind. This pig was autopsied but there were no lesions found that would account for the clinical manifestation. On this farm some calves were found affected with pink-eye (infectious conjunctivitis.) These calves were yarded about 300 feet from the hog lots. Is bovine infectious keratitis transmissible to swine?—C. J. S., Minn.

Reply by A. T. Kinsley: Some three or four reports of a malady in pigs that were clinically similar and possibly identical to infectious keratitis in cattle, have been received but in the available literature there are no reports of laboratory findings in these cases. Therefore, it cannot be stated positively that the disease in pigs and in cattle are identical.

If the disease in swine is the same as the disease in cattle it would be possible for the infection to have been transferred 100 yards by dust, flies and perhaps in other ways.

It would be advisable to submit one of the affected pigs to a reliable laboratory for examination.

Veterinary Medicine will be glad to receive other reports of this malady from practitioners and any suggestions relative to control and treatment will be published.

VETERINARY PUBLICITY*

Because of the eminent success of the Eastern Iowa Veterinary Association in getting publicity for the veterinary profession, the state association has at last taken up the matter and at its last meeting, it assessed all members $1.00 for publicity purposes. To date about one-half of the members have paid this assessment and the publicity committee now has $200.00 on hand. So far a number of plans have been considered and a policy is being formulated but nothing has been done by the committee as yet to attain any publicity. Our plans will be modeled very closely after what experience in the Eastern Iowa Association has shown to be a successful method of procedure. The state association has under consideration now, and it will come up for final action at its next meeting, an amendment of the by-laws to permit members to advertise specialties without violating its code of ethics.

The plan inaugurated in the Iowa Veterinary Medical Association two years ago of inviting all members of the state legislature to the association banquet where an appropriate program was rendered, was perhaps the best publicity that any veterinary association has ever

* Abstract of report of Dr. E. R. Steel at the Eastern Iowa Veterinary Association meeting, Cedar Rapids, October 13-14, 1926.

worked out. At the first banquet, the members were told to invite the representatives from their territory to the banquet as their guests. As a result, in too many instances where there were several veterinarians in a given territory and only a single representative in the legislature, too many waited for the other fellow to do the inviting. At the banquet last year, the members of the state legislature were to be invited by the veterinarians from their districts, but were to be the guests of the association, and a sum sufficient to pay for the banquet tickets was appropriated from the association treasury. This plan worked a great deal better.

The plan for the state veterinary meeting next January calls for the veterinarians in the various counties to see their members of the legislature immediately after election and secure their definite promises to attend the banquet, and supply this information to the secretary. Last year a considerable majority of the members of the state legislature attended the banquet and this year it is hoped that practically 100 per cent. attendance from the legislature will be attained.

The result of this has been most beneficial to the veterinary profession and live stock interests of the state and very informative to the members of the legislature. At the banquet at the next meeting, Dr. M. P. Ravenel of the University of Missouri, a well known, and very entertaining lecturer, will speak on the relation of the veterinary profession to public health, and Congressman Sloan, father of the national tuberculosis legislation will also be a speaker. Several reels of motion pictures dealing with veterinary services have been obtained and these will be shown. These pictures will include one reel showing the operation of the veterinary school at Ames. Representatives of the Iowa State Breeders Association will also attend the veterinary banquet.

The relations between the Farm Bureau Federation and the veterinary profession of Iowa were never better; the State Department of Agriculture is cooperating with the state veterinary association in enforcement of the veterinary practice law, and has offered their assistance in procuring some amendment to the law to remedy certain weaknesses now existent. It is hoped to get an injunction provision into the law that will make a second prosecution for the violation of the veterinary practice act unnecessary.

PROLAPSE OF INTESTINES IN DOG

The accompanying illustration shows a fox terrier bitch, which on copulation with a dog twice its size, sustained a rupture of the vaginal wall and a subsequent prolapse of some coils of the small intestines.

When the animal was brought to the clinic of the College of Veterinary Science, the bitch was suffering from acute pains, the intestinal prolapse being passively congested and bloated. Since the owner objected to the killing of the animal, attempt at reposition was made under general anesthesia.

The prolapsed portion of the intestines was disinfected with a mild antiseptic (1% watery solution of iodin) and then thoroughly washed in physiological salt solution. It was then carefully pushed back into the abdominal cavity and a bandage applied to the perineum. The animal died from septicemia the following day.

I thought this case might be interesting to record, showing the dangers from mismating.

Los Banos, P. I. A. K. Gomez, D.V.M.

HAMS DAMAGED BY CASTRATION OF PIGS

Farmers' Bulletin No. 1357, "Castration of Pigs," U. S. Department of Agriculture, calls attention to serious damage to hams from careless, insanitary castration of pigs. The damage frequently is not noticed until the hams are about to be trimmed for curing. The principal injuries are those caused by abscesses or the scar tissues that develop in neglected cases, resulting in the condemnation, at federally inspected packing houses, of infected hams. Sometimes the damage is so extensive that only a small portion of the meat may be utilized. Among the chief causes of the trouble are the use of dirty knives, failure to clean the area of operation, and turning the pigs into insanitary pens or feed lots immediately after the operation.

PYORRHEA IN DOGS AND CATS

Referring to the article in the September issue of Veterinary Medicine on pyorrhea in dogs and cats by Henry Gray, I do not agree with the author that the cause of pyorrhea is due to the dog not eating hard foods requiring violent use of the teeth.

It is a dietetic disease caused by not feeding a natural diet and is never found in a dog or cat eating raw beef. Pyorrhea can be produced in a dog in a few weeks by improper food, hard or soft. The dog and cat should not be fed any food other than raw beef and milk. They are strictly carnivorous and have chiefly pure sulphuric acid as a stomach digestant, but man has hydrochloric acid in his stomach and may digest both meats and starches, etc.

It takes the dog twenty-four hours to digest a stomach full of raw beef, and therefore he should not be fed any oftener than once a day.

Dogs and cats eating raw beef live much longer and never have trouble with their teeth. They also are devoid of obesity, rheumatism, constipation, and have a nice coat of hair, a sweet breath and white teeth. Local mouth treatments and systemic treatments for pyorrhea are of no avail, unless the diet is corrected, which is the basic cause.

The dog is not supposed to masticate his food but swallows it in chunks, yet he does crush the bones. However, city dogs would be better off if they did not eat bones, since the animal must live an active life to digest bones.

A person or animal with normal digestion has nice white teeth and healthy gums. Disorders of the teeth and gums, therefore, are only symptoms of disordered digestion. It is a debated question whether the tooth brush is of value. It is claimed that more harm than good may come from its excessive use as it wears away the protective coating and separates the gums from the teeth.

Mark White, M.D., V.M.D.
Chicago, Ill.

MINERAL FEEDS

The known mineral feed requirements of farm animals are simple. When there is need for mineral nutrients other than common salt such requirements are commonly limited to calcium, phosphorus or iodin.

Profitable investment in mineral feeds requires a more discriminating attitude than is customary, or necessary, in the purchase of other feed products.

The existing knowledge of the mineral feed requirements of farm animals, under different conditions, is far from complete. For safe guidance, the feeder should depend on the disinterested agencies at his command.

In relation to general farm management the facts as to mineral metabolism are such as to emphasize the importance of growing and feeding leguminous roughage, and of handling breeding females in such manner as to provide an adequate resting period, before parturition, with liberal allowance of feeds rich in mineral nutrients—which in general signifies, as already indicated, leguminous roughage.

—Animal Pathology Exchange, Univ. of Ill.

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